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VOL. XXXVII. MARCH, 1918 No. 9. (Full No. 434)

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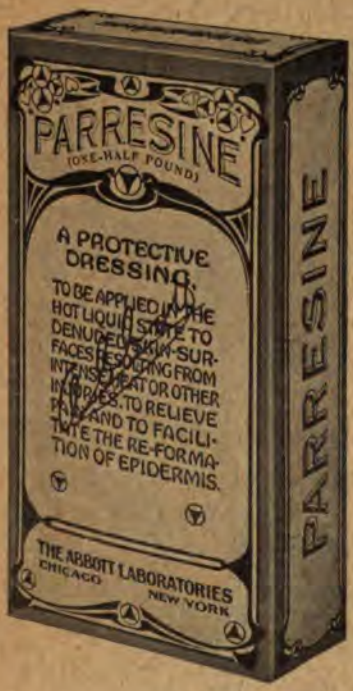

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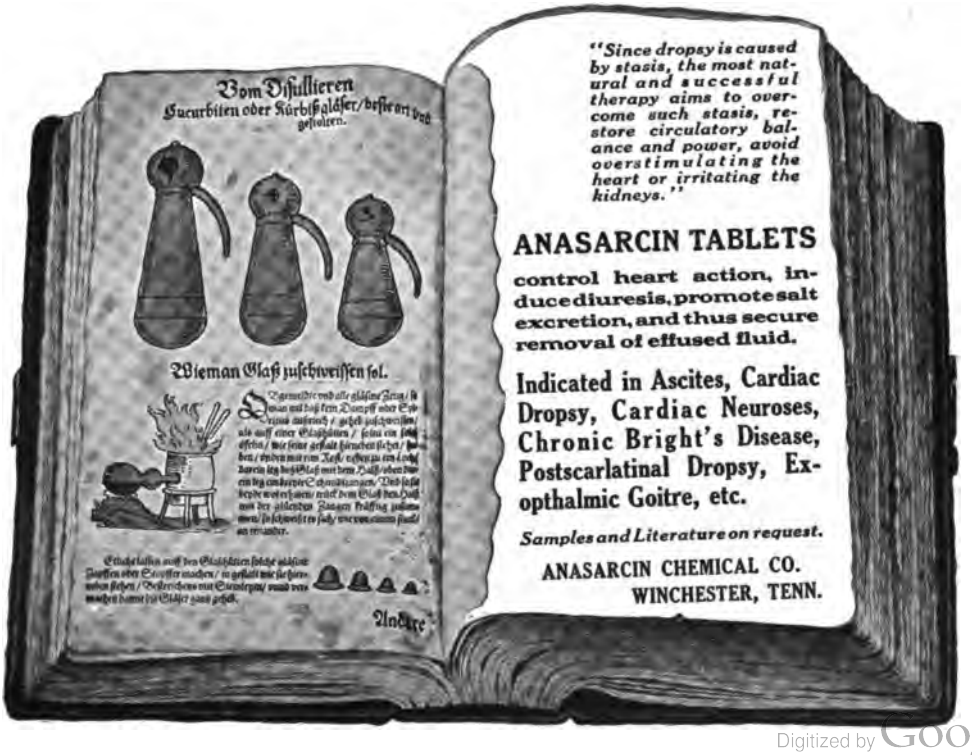

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Western Medical Times

VOL. XXXVII MARCH, 1918 No. 9

The Value of the "No Good"—The History of the X-Ray.

NINETEENTH PAPER

DOUGLAS H. STEWART, M.D., F.A.C.S.,
New York City

"As Edison had his Franklin, so had Roentgen his Lenard."

In view of the fact that Roentgen did *not* discover the X-ray; yet everybody seems to know that he did discover it; perhaps the clearing up of the muddle is a valuable thing. Therefore it may be well to consult some of the literature that bears directly upon the matter and to quote therefrom sufficiently to correct the present American view. In European countries the writings of Roentgen himself and those of many other scientists are available and a correct idea prevails, or should prevail.

To abstract the literature would be a colossal task but fortunately Dr. J. Belot of Paris wrote a work upon Radio-therapy in Dermatology, that contains a Historical Review of Roentgen's Discovery. An English Translation was made by W. Deane Butcher, M.R.C.S., Surgeon to the London Skin Hospital and was published by Rebman in 1905 as an authorized translation from the second French Edition. Dr. Belot was considered "an electrician, a mechanician, a physician, a most enthusiastic investigator of the new science (X-ray), and one who had the necessary leisure to be able to devote himself exclusively to the work."

Unfortunately this work appealed to Dermatologists only and thus was its field and circulation limited. The following are extracts from the first chapter of the second (1904) edition of Belot's book. Though fuller details may be found in Bouchard's Treatis upon Medical Radiology, Paris, 1904. Between 1895 and 1900 many Roentgen Societies and X-ray Associations were formed. All the principal ones have published transactions so that these extracts may be easily corroborated in almost any country or in almost any language.

As long ago as the eighteenth century the Abbe Nollet, in studying the sparks discharged from an electrical machine, arranged an apparatus so that the spark should pass through a glass globe which could be gradually exhausted. He observed a curious phenomenon; little by little, as the pressure in the globe decreased, the spark, a mere narrow thread of light at ordinary pressures, broadened out.

From this he came to the conclusion that the electric fluid circulated more easily in a vacuum than in air, igniting the rarified gas more readily. The apparatus used by the Abbe is in principle the same as that employed at the present day for the production of X-rays.

In 1843, Abria of Bordeaux obtained a vacuum with a pressure of only 1 or 2 millimeters of mercury. The electric egg as his apparatus was called was driven by a Ruhmkorff coil.

About 1879, the English physicist, Sir William Crookes produced still higher vacua with a pressure of only a few millionths of an atmosphere. In the Crookes tube the electric egg of the older experimenters is reduced to a simple tube of

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glass, the discharging knobs being replaced by platinum wires or aluminium discs.

According to Crookes, at the degree of rarification obtained in these tubes the gaseous particles are quite independent of one another. They can traverse a rectilinear path of finite length without mutual collision, and the extent of the dark zone in front of the cathode is a measure of the mean free path of the particles under the existing conditions of pressure. Masson has clearly demonstrated that in the highest obtainable vacuum no electric discharge takes place. Hence we are led to believe that the gaseous particles still remaining in the tube are the medium of the discharge.

Crookes devised various experiments to prove the truth of his hypothesis, among them the electric mill, which rotates under the impact of gaseous particles, and the mica cross which, when interposed in their path, throws a shadow on the fluorescing glass.

In 1893, Lenard, taking advantage of the transparency of aluminium to cathode rays, examined them outside the Crookes tube. In order to do this he inserted a window of thin aluminium foil in the glass opposite the cathode. The rays which have passed through this window cause many bodies to fluoresce, just as they do when placed within the tube. Further, these rays act on a photographic plate, they discharge electrified bodies, and after their exit from the tube they are able to traverse the most perfect vacuum which has as yet been obtained.

It was soon found that these radiations outside the tube were complex in character. Lenard showed that a part only were deviated by a magnet, the remainder being totally uninfluenced by the magnetic field. There were therefore issuing from the tube, radiations hitherto unrecognized. This second portion of the rays unaffected by the magnetic field, was in fact composed of X-rays. Lenard may therefore be regarded as the first observer of these new rays. He it was who first recognized their existence, though he was unable to isolate them.

This was reserved for Professor Roentgen, experimenting with a Crookes tube in his laboratory at Wurzburg. The tube, which was enclosed in a cardboard box, had no metallic window. Whilst working with it, he noticed that some barium-platino-cyanide crystals which happened to be lying in its neighborhood became luminous.

Under their influence a screen of barium-platino-cyanide was found to be illuminated at a distance of more than 2 metres from the tube.

Roentgen next conceived the idea of replacing this screen by a photographic plate, and found that it was also affected by the rays. A thick piece of wood or a slab of ebonite failed to screen the plate from their action. Aluminium was found to be transparent, while lead was quite opaque to these rays. He discovered that these rays emanated from those portions of the glass tube which fluoresced under the action of the cathode rays.

He found that they passed through most bodies opaque to light with more or less facility, and that the transparency of any substance to the X-rays was closely related to its density.

Following up this discovery, Roentgen interposed his hand between the glowing tube and a sheet of cardboard covered with crystals of barium-platino-cyanide. A shadow of the hand appeared on the screen, and the darkness of the shadow was differentiated for the bones and the softer tissues. The denser bones stopped most of the rays, and showed as a black shadow. The softer parts were more easily traversed, and allowed most of the rays to pass through them, thus causing the screen to fluoresce feebly, so that the whole shadow was of a pale gray color. The unshadowed portion of the screen fluoresced brilliantly. This was the birth of radioscopy.

Roentgen next replaced the fluorescent screen by a photographic plate. After a suitable exposure he developed it, and ob-

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tained a clear outline of the form of the hand, with a distinct silhouette of the bones. This was the origin of radiography.

The memoir communicated by Roentgen to the Physico-Medical Society of Wurzburg in December, 1895, aroused the greatest interest. Scientists all over the world welcomed the new discovery. In every country the experiments were repeated, and all other original work in the laboratories was suspended. "What excited the imagination," says M. Bertin-Sans, "was not so much the new theory of the electric discharge, as the discovery of a new procedure as precise as it was unhoped-for, which enabled us to obtain a photograph of the skeleton and to perform an autopsy of the living body."

The advance was now rapid. The power of the electric generators was increased, induction-coils were improved, and static machines were gradually brought into use. In 1896 Jackson constructed the first focus-tube by interposing a small platium disc in the path of the cathode rays. By this arrangement the power of the tubes was considerably increased, and the duration of the exposure necessary to obtain a radiograph was reduced from thirty minutes to as many seconds. Many other scientists besides Roentgen set themselves to discover some theory which would explain these phenomena in accordance with accepted physical ideas.

In many cases during the course of experiments with X-rays, it was found that these radiations set up a peculiar reaction in the skin of the operator's hands. In some instances even more serious accidents occurred.

Schiff and Freund conceived the idea of employing this reaction in the treatment of disease. This was the origin of radiotherapy.

With increased knowledge of this new form of energy, it became possible to measure it both qualitatively and quantitatively, and thus an empirical and arbitrary procedure became a true science; for all science is based on accurate measurement.

Thus Lenard is the discoverer, Roentgen the utilizer for photographic purposes and Schiff and Freund the employers for therapeutic purposes. Americans seem to be quite unaware of the enormous amount of experimentation and writing upon Roentgenology that Paris and its publications afford. Unfortunately the French scientists only write for those who read French and it is but rarely that a translation is made into English, whereas translations into German abound and many Germans read French, consequently many Americans refer to many scientific matters as being of German origin; when they have but reached us through German sources.

Care of Childrens' Teeth.*

G. C. STEINMILLER, D.D.S.,
Reno, Nevada.

I have been asked to discuss the care of children's teeth. The subject, to me, is vitally important and I am more than pleased to know that the Mothers' Clubs of Reno have shown an interest in this subject, thereby making a step forward in preventive medicine and dentistry. It was my good fortune to be able to attend the Carr School of Preventive Dentistry and Medicine, which opened my eyes to the necessity of the early care of children's teeth and the close examination of all restorative measures.

For the purposes of this discussion it will be well to divide the time, in which the permenant denture is being constructed, into three periods: First, the care of the mouth and the prospective mother. Second, from birth to the fifth year. Third, from the fifth year to maturity.

It might be well to drive out a few sup-

*Read before the Mother' Club, Reno, Nevada, during Baby Week, 1917.

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erstitions that you are most likely familiar with. First, the one that dental care of the prospective mother will produce birth marks upon the child, and the second, that it is natural for a woman, during pregnancy, to have trouble with her teeth and that she must expect to lose a tooth for each child.

To banish the first superstition, we have only to recall two facts. First, that fetal development is too far advanced before the mother is aware of her condition to effect the developing child. As for instance, cleft palate, or the failure of the two palate bones to meet, would occur in the second month. Then again, we are shown that major operations are successfully performed upon women during pregnancy, all of which are followed by the successful delivery of a normal child.

The superstition of a tooth for each child is harder to overcome, because women do suffer with their teeth and often lose one or more with each child. This is not a natural condition, but a pathological one due to neglect; the greater neglect, the more trouble.

The only danger a woman need fear from dental work is a shock so great that it will produce abortion or miscarriage. Such a danger is so remote that, for all practical purposes, we can say that it need not exist if the dentist knows the patient's condition, for then he will not undertake long or painful operations.

On the contrary, where the mouth is neglected, the shock from prolonged toothache, or the pus or poison absorbed from an abscessed tooth, may be severe enough to cause abortion. Even if this serious condition does not follow the suffering caused by a neglected mouth, the indigestion, the toothache, or the effects of absorbed pus, must surely lower the vitality of the developing fetus.

The pregnant woman can be saved much pain and destruction of her teeth if she begins to care for them just as soon as conception is known. A dentist should be consulted, all cavities cleaned and filled. those teeth that are too badly diseased to save should be removed, all teeth polished, tartar removed, inflammed gums treated, the condition of the saliva noted and a proper mouth wash prescribed.

If these conditions are neglected during the period of nausea the teeth and tongue become badly coated, the saliva ropy and acid, and the teeth decay in direct proportion to the proportion of acid, causing toothache, abscessed teeth, pyorrhea, loss of sleep, lowered vitality and absorption of pus. There are cases on record in which shock from such suffering has brought on premature delivery. Then again, the poison may be so excessive that the fetus cannot survive. *A clean mouth is necessary for good health of both mother and child.*

Popular beliefs to the contrary, notwithstanding, the newborn infant has teeth, calcified, but not yet erupted.

Between six months and two years, ten teeth erupt. These are called deciduous, or commonly known as baby teeth. The first operation the dentist is called upon to perform for the deciduous teeth is lancing the gums, as an aid to eruption of these organs. *This is not necessary in normal cases.* While the deciduous tooth is erupting the permanent tooth is forming just under it and when a deciduous tooth is bound down by dense gum tissue above, it retards its normal growth and causes pressure on the formative organ, causing intense pain, which manifests itself by functional inharmony. The gums are swollen and congested, the nervous system is disturbed. High fever, vomiting, diarrhea, convulsions, stupor, and in extreme cases, death.

So, should baby show the symptoms as mentioned, then I advise the attention of a dentist. Oftentimes it is well to rub the gums with ice as a temporary relief. It relieves the congestion, and being hard, aids the parting of the tissues.

The first teeth to erupt will be the central incisors, two upper and two lower, from the fifth to eighth month; these are followed by the lateral incisors, sixth to ninth month; then the first molars, fourteenth to sixteenth month. Then comes the cuspid, or baby eye teeth, seventeenth to eighteenth month. Lastly, the two

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molars, eighteenth to twenty-fourth month. Cavities in any of the deciduous teeth should be the call for immediate attention of a dentist.

After two years the growth of the jaw carries the teeth apart, allowing, or making room, for the coming of the permanent teeth.

The absorption of the roots of the deciduous teeth starts at the fourth year. After this time abscesses are frequent and should be given immediate attention by a dentist. From the fourth to the sixth year is an important stage, in that the teeth are called upon for the masticating of harder foods, the retention of the deciduous teeth thereby aiding the growth of the jaws and preserving the fulness of the arch.

Should a deciduous first molar be lost it would allow the permanent or much larger first molar to move forward and occupy room that should be preserved for the second biscuspid. The same is true for the rest of the teeth. As a result you find crowded and unshapely teeth and arches.

It would be well, before considering the permanent teeth, to strongly advise that mothers nurse their babies during the first year of life. More than twice as many bottle-fed badies die during the first year, as do nurslings. Bottle-fed babies are more often ill nourished, not being able to digest artificial food. If this continues, the growth of the teeth in the tiny jaw is interfered with and the teeth will be badly shaped and have pitted surfaces. Bottle feeding is productive of ill-shaped mouths, adenoids, broken down deciduous teeth and malocclusion (orthodontists should be consulted).

The permanent teeth follow in their eruption at the fifth year. There are 32 permanent teeth, divided into four classes; incisors, cuspids, bicuspids, molars. Their time of eruption is:

First molar, fifth to sixth year.

Central incisor, sixth to eighth year.

Lateral incisor, seventh to ninth year.

First bicuspid, ninth to tenth year.

Second bicuspid, tenth to twelfth year.

Cuspid, eleventh to thirteenth year.

Second molar, twelfth to fourteenth year.

Third molar, seventeenth to twenty-first year.

From the time the permanent teeth begin to erupt, until all deciduous teeth are lost, is the most important time for consideration, some mouths being more susceptible to decay than others.

The proximal surface of the incisors and the morsel surface of the molars are to be watched closely.

The first permanent molar is the most important in the entire arch. It keeps the jaws at their normal distance apart and is the vital factor in the occlusion. If lost, it allows the jaws to drop closer together, which detracts from the strength of the character shown in the face, in that there is inharmony in the outline of the face. If lost before the eruption of the bicuspids or the second permanent molars, it producers mal-occlusion, in that it leaves a space toward which the bicuspids and second molars will tip.

The first visit of a child to the dentist is a momentous occasion. Some make it with most eager anticipation, others with fear, mostly dependent on the point of view given the child by the parents. The dentist, in treating teeth for children, should be a student of human nature. He should study the temperament of the child and should be a perfect master of him while in his office.

I advise mothers to be very careful when mentioning the dentist before children. Do not speak of him as a beast, thereby painting a picture in the little mind that will not wash out, and which will develop that dread which later will influence its life, even unto death. Be charitable, reason with the child, make little of pain. Picture the dentist as one who relieves pain and wishes to be a friend.

On the occasion of the first visit, I would advise that the mother ask for an examination of the child's teeth, allowing the little one and the dentist to get ac-

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quainted. It is then up to the dentist to arrange appointments and gain the confidence of the child. When once the child's confidence is gained, you may rest assured that he will be well cared for. On the contrary, if the dentist seems rough and wishes to deceive the child as to what is to be done, by telling him that he will not be hurt, and then deliberately hurts him, that one act may so terrify the child that it will influence the life to follow and result in the early wearing of artificial dentures.

There are two ways of cleaning the teeth, natural and artificial. The natural way is by the elimination of our civilized foodstuffs and being uncivilized in that respect. Our foods are too soft. We should go back to hard bread and other uncivilized luxuries.

Artificial cleansing is our salvation. I believe in both bristle and rubber tooth brushes. Alkaline and acid mouth washes, as indicated; salt water for the normal mouth. The flat and dental flosses have their place. Children should have a suitable mouth wash and tooth brush, with proper instructions as to their use, and should visit the dentist every six months for examination, and treatment if necessary.

The physicians and societies in the larger cities are realizing more each day the absolute necessity of clean mouths in children. Of 12,000 cases of prevalent diseases reported, 63 per cent. had origin in the mouth.

In all the larger cities the public schools have their operator or examining dentist, who examines the teeth of the children, reporting to the teacher, who in turn reports to the parents, advising and specifying the course of treatment. This is one of the greatest preventive measures we have.

Ask the teachers of your public schools about the conditions of the mouths of the pupils and it will give you food for thought; 93 per cent of the public school children have defective teeth. It is my purpose and ambition to start just such a movement in our local schools, placing a young, competent man in charge. We will have less disease and our schools will not be closing, because of different epidemics, as they have in the past. I intend, in the near future, to start at that point and, with the aid of charitable organizations and clubs, give our school children a chance. It is a proven success. Even large business houses employ a dentist to care for their employees, thereby getting more efficient service.

Time does not permit the enumeration of all the possible accidents or incidents which the child's mouth presents during the transition period, when the permanent denture is being established. It is my wish to lay particular stress upon the necessity of more care than we ordinarily give the average child. This means much in the efficiency and subsequent health and usefulness of the individual. Unfortunately, even in the intelligent families today, the child's teeth are sadly neglected. Education of the parents to this end is essential, but there is no other way than through the children themselves at school.

Medical and dental inspection has proved to be a wonderful success. But no medical inspection has approached anything like completeness without a thorough examination of the mouth.

The care of the child is a sacred trust, from conception to maturity, and we must give them their birth-right of "preparedness" for adult life, even though they may have sprung from an environment of poverty or ignorance. It is up to us to remove all obstacles standing in the way of perfect development and growth.

In my opinion a great step in conservation would be made if our schools were provided with an adequate force of trained dentists, who would examine and report, or give the necessary treatment to children unable to secure service for themselves.

Masonic Temple.

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A Medical Comparison of Castor and Mineral Oil.

JOSEPH B. WEIGHART, M.D. and ROBERT F. McDONALD, M.D.,
New York City.

CHAPTER X

Mineral Oils

The mineral oils must be carefully considered in this regard. If they are really what they are claimed to be, the introduction of mineral oil in the pharmacotherapy would be a great advance. We regret to say that we have found to the contrary.

The claim of an ancient internal use for mineral oil is untrue. The fractionation of the natural oil was introduced between fifty and sixty years ago. The non-fractionated natural mineral oil was at that time considered too poisonous for any internal administration. The most prominent pharmacologists of fifty years ago counted the mineral oils among the other poisons.

Mineral oil has been used as a feces softener a very short time compared to the time that castor oil has been used. The first question that arises for the careful physician: Has Russian mineral oil been really proven a valuable and harmless drug after satisfactory pharmacological research? Having settled this question, the second question arises: Has American mineral oil really replaced the Russian oil in every pharmacological respect? The mineral oils of the old and new worlds are very different in chemical composition and physical properties. A third question may be: Are the different American mineral oils mutual equivalents?

The recommendations of these oils are based on empiricism and very unscientific deductions. We were entirely unable to trace any scientific testing by pharmacological or exact clinical methods. The isolated empiric statement of produced softened feces is all that the literature shows. The statement of therapeutical non-toxicological effect, without details, is no scientific statement. A scientific man, who wants to state his point, has to produce exact statements, that a series of biological processes did not become influenced in an obnoxious sense. A man who cannot show research work of this kind, cannot be a witness of the harmlessness of the different mineral oils. Especially, H. W. Wiley must be mentioned. He is the father of the famous pure food and drug law. He made very painstaking research regarding boric acid, benzoic acid and sulphurous acid. He is one of the advertised recommenders of mineral oils. In this case, we can expect that responsible man of his scientific record has made a small part, at least, of similar research in the direction of mineral oil in an earlier time, since he allows the use of his name for such advertisements. We were unable to find publications recording related research of H. W. Wiley. In a contrary direction, we cannot believe that he, or any other scientist, ever did similar investigation. Our experiments prove, undoubtedly, that mineral oil is more dangerous than boric acid, benzoic acid, and sulphurous acid. No scientific research has been done at all; one recommender followed his predecessor without using his own judgment; no recommender noticed the entire absence of any scientific basis for the recommendation of mineral oil. However, this absence is not a reason for us to repudiate the mineral oil. On the contrary, we believe that laymen's experience and tradition often contain many valuable remedies. We believe that it is the practitioner's duty to try these drugs; but our restriction is that this must be done only after a satisfactory

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study by scientific medical methods, and this absence is what we wish to blame in the case of H. W. Wiley's recommendation of the different advertised mineral oils, including Liquid Albolene, Interol Liquid Petrolatum and many others. Nujol is the product of the richest concern and received the preference of Dr. Wiley's recommendation. The interest of wealthy American concerns is insufficient to vouch for an untested profitable business as far as science is considered.

For the technical use of Vulcan oil or lubricating oil, the chemical differences of Russian and American oils are not important. The difference of specific gravity does not count here.

For internal medical use, the question of possible influence to the metabolic chemism must be considered first. It is absolutely wrong to say that the medical use of mineral oils is only a problem in lubrication. A layman without medical training may suggest this. It is a pernicious mistake if the licensed physician takes without criticism the pharmacological advise of these advertisements. Machines or instruments of iron or other metals may be lubricated by Vulcan oil. For cloth, paper, and other permeable technical products, this layman's wisdom finds a boundary, and a noticeable difference prohibits every sane body the administration of lubricating oils. The oil would enter the technical tissue and spoil the matter. It is a very foolish mistake to compare the human digestive apparatus to the metal parts of an engine. The human apparatus are permeable parts of an organism and may become greasy and clogged by foreign inbibition like the dress may become dirty by contact with lubricating oils. It is really worse because the dress may be washed. A sick organism again needs a cleansing, and not a further pollution. It is ridiculous to consider the digestive apparatus as a sliding plane where the food enters by the mouth and leaves by the anus, and that the only thing necessary to do is to lubricate this passage sufficiently to allow the contents of the intestines to slide out. They forget entirely that the intestinal contents need a direct contact with the walls in order to become digested and extracted by absorption.

We will return to the scientific consideration of the matter and we beg the pardon of the medical reader for this digression. Printed matter concerning quack declarations is sent repeatedly to the members of the medical profession, recommending the use of mineral oils. This is the only reason why we were forced to mention such ridiculous physiology.

The raw mixed mineral oils is a natural product. It was known and technically used thousands of years ago. An internal use was unknown. The modern technical use starts with the year 1859, and with the fractionation in different partial oils of different boiling points. The internal medical use was not tried until the fractionation.

Many Americans know that Drake drilled his first petroleum well at Titusville in Pennsylvania in 1859. This was the first step in the development of the technical use of mineral oils in modern ways. The American tongue of this time found no pleasure in the taste of the older kerosene oils. It has already been mentioned that these oldest fractionations have lead to serious intoxications.

The Russian competitors of the American petroleum market have first used certain fractionations of high boiling point for internal purposes. Russian immigrants caused the importation of these medicinal mineral oils to the United States. The population of the United States became familiar with the Russian medicinal mineral oil. They tried to substitute it partially by American mineral oil products. The big European war made the importation more difficult, and increased the tendency for this substitution.

The medicinal mineral oils used are not drugs of the general oil market. They are nostrums of proprietary medicines of special business concerns, interested in their propagation.

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Russia and America produce the principal part of natural mineral oils. The other countries together produce only 5% of the world's production.

The raw natural mineral oils consist of a high percentage of normal alkans. They include compounds with only five carbons up to more than 30 carbon atoms in the molecule. There is not one intermediary figure which is not contained in the natural product. This is remarkable in comparison to the fatty acids of which only the members of even carbons atoms have been considered for physiological effect.

There are certain principal differences between Russian and American mineral oils. All the products of both classes keep to some degree these differences. The American oils contain a remarkable amount of ramificated alkans and the Russian oils of cyclic polymethylenes.

Every one of the innumerable constituents of a natural mineral oil must be considered as a chemical unit. Everyone has a certain solidification or melting point, and a certain boiling point too. The specific gravity is again individual for every separated constituent. Solidification point, boiling point, and specific gravity increase with the increased molecule. A relative higher percentage of hydrogen atoms decreases the specific gravity and carbon atoms increase in the same sense. The average Russian molecule of the same volume contains more carbon atoms and the average American molecule more hydrogen atoms. The compounds of small molecules of both kinds are very volatile and the large molecules melt only by high temperature.

Every natural mineral oil and every one of its fractions is a mixture. In the sense of the chemist, these mixtures are solutions with the alkans of larger molecules in alkans of smaller molecules. A general chemical rule decreases the solidification point and raises the boiling point of all solutions.

By distillation with different temperatures, the natural raw oils are split into fractions. The above physical means prove very easily these fractions or mixtures or solutions of neighboring numbers of carbon atoms in the molecule.

The advertised medicinal mineral oils are different mixtures of normal alkans and related chemical compounds of molecules containing carbon atoms in an amount not far from 20.

Modern therapy has the tendency to replace drugs of natural mixtures by a single one in a chemically pure condition. The best castor oil of the drug market is 95% pure ricinolein, and corresponds to the above claim. Every mineral oil is a mixture in contradiction to the modern tendency. In the sense of modern progressive pharmacology, mineral oil is by no means an improvement over castor oil.

The mineral oils are mixtures. They can only be identified with very much more difficulty than every other average drug of the modern pharmacopœa. The worst feature is their tendency to form impurities of the body fat and these impurities become more difficult to eliminate the more single chemical units they contain.

CHAPTER XI.

IMPURITIES OF THE BODY FAT

The absorbed mineral oil as an impurity of the body fat is understood, if the general impurities of body fat are thoroughly considered.

We learned above the constitution of human fat, dog fat, goose fat, etc. The animal fats are mixtures. Some vegetable fats may be determined chemically. The later ones are very often a pure homogeneous trifatty glyceride from 90 to 95% purity. The difference may be called impurities. These impurities are based on the property that fats and fatlike compounds have a mutual dissolving property and may dissolve other organic compounds, which water is commonly unable to dissolve. Every natural fat of the vegetable and still more of the animal kingdom contains a certain per-

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centage of foreign impurities of this kind. The origin of these impurities of the animal kingdom is enterogenic and especially from the food. They are deposited with the stored fats in the connective tissues. Later, the skin attempts to repurify the body fat.

Different biological conditions of plants and their different internal chemism produce different vegetable fats in various plants. This variation depends upon the food supply and fat selection of the species. Mammalia and birds are especially fitted to selection and repurification of their fat by their physiologically increased and constant body temperature. These general views are explained in the chapter on real fats of the vegetable and animal kindom.

The preparatory research of Finkelnburg for Tropon showed the real proteid matter of animals free from perceptible odor. All the odorous principals were dissolved in the contained fats. Finkelnburg was able to get every animal proteid matter free of taste and odor, if it was really freed from the last trace of fats.

Carps living in swamps contain large amounts of badly tasting impurities in their fat. These impurities of carp fats are to some degree soluble in water. The bad taste disappears if these carps are kept for sufficient length of time in pure water. This excretion of the carp is executed by the function of the skin.

Wild ducks and wild geese possess a fat with impurities of smell and taste similar to cod liver oil. The subcutaneous fat of these birds contains more of these impurities than the fat of the abdominal cavity. These impurities cannot be extracted by water. It depends entirely upon the food used, whether the fat of domestic ducks and geese will get the same taste or the very agreeable taste found when free of these impurities of the wild birds. The higher concentration of these impurities within the subcutaneous fat is owing to the fact that all the fat impurities are passed by biological means to the subcutaneous fat for excretion, but as the excretory facilities of the skin are overburdened, the subcutaneoeus tissue becomes overloaded with impurities. Carps and eels of the fish; ducks and geese of the birds, and then, too, pigs and human beings seem to resist this over-charging with fat impurities. This will be part of our future experiments. Rats, mice, and guinea-pigs are more sensitive against these impurities and die quickly. It will be a long and difficult study to get clear all the details by experiments.

Exact chemical methods to isolate the bulk of these impurities and to determine them in figures are unknown. Only impurities of specific color, specific odor or specific taste may be estimated in relative amounts.

Analytical chemistry may figure out certain figures for the theoretically pure predominant fat. By the real figures found in a specimen, it may be determined, if the present impurities exceed the allowable amount. The saponification, refraction, iodine addition, acetyl addition, melting point and boiling point and specific gravity are the most commonly used determinations. The allowable limits are in average 90 to 95% of the expected figures for chemically pure products.

This means the most natural fats are theoretically a certain chemical compound, or a mixture of certain compounds, and contain 5 to 10% foreign impurities. Not only the amount of these impurities is important; the chemical character is more important. Chemical impurities by other fats or by biological related lipoids are less toxic than compounds very different to the reactibility of real fats. Lipoids and foreign fats will not kill rats, mice and guinea-pigs. The alkans as impurities belong to the group of most differing reactibility. They may be considered in the same group as the coloring impurities; but the coloring impurities are not toxic.

The most natural fats contain some coloring matter which seams originally to have some relationship to the green

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and yellow colors of the plant kingdom, especially the chlorophyll. The absorption of fat from food is made possible by the function of bile and especially by steapsin, the lipase of the pancreatic gland. In this mechanism of absorption of fats, coloring matter and other fat-soluble compounds are not separated from the fat. If food fat with a trace of coloring matter is deposited in the connective tissue, the coloring impurities are deposited too. They are not poisonous, and may stay there without causing a strong reaction of the organism.

For this reason, the fat-cells contain besides fat a yellow pigment the result of the above mentioned impurities, which in emaciation does not disappear as rapidly as the fat. This is the reason that the subcutaneous cellular tissue of an emaciated corpse has a dark orange-red color.

Again, the stored fat of the connective tissue is activated by a lipase. Loevenhart (American Journal of Physiology 6) has found that all over the body, where fat is deposited in large amounts lipase also occurs in considerable amount. Adipose tissue is rich in fat splitting enzyme and in katalases. This presence of the lipases must be of importance and their function is interferred with by the presence of kerosene derivatives. Normal simple coloring matter will not interfere. It will be necessary to prove this by special experiments in further details.

If the deposited fat of the connective tissue is needed by the organism, the local human lipases activate first the stearin and palmitin, then the olein. They activate less the uncommon fats and the oxygen containing lipoids; but they do not activate at all the foreign impurities, if they are not able to react chemically in some respect like real fats. This may be learned from the coloring impurities. They are retained by the emaciated connective tissue. If during life fat was deposited but once, the trace of coloring matter is very small and fat seems almost white. If fat was repeatedly deposited and re-absorbed, the ultimate fat becomes more yellowish on account of a higher concentration of the coloring impurities, principally by the above mentioned yellow pigment.

The fat of fattened bulls is therefore white and the fat of old cows is yellow. This fact is put into practical use by experienced housekeepers if the butcher tries to substitute cow meat for beef meat. Cows are commonly slaughtered after repeated pregnancies and lactations, periods where the stored fat is repeatedly used and later on new fat stored. That is the reason that the fat of cows contains a higher concentration of pigment material.

For the same reason, human beings or animals killed by starvation show dark yellow connective tissue, where they were once rich in fat.

Animals have better and stronger instincts than human beings as regards selection of food. They are very sensitive to impure fats and refuse many kinds of food only on account of the impurity of the mixed fat. A pet cat in a family using only butter in their cooking refused every fried meat of first class restaurants on account of the fat used in cooking, but differing from real butter.

Carbohydogens, including the so-called mineral oils, are soluble in fats. They become partly dissolved by food fats of the intestinal contents if they are taken by the mouth. They become partly absorbed and deposited in the connective tissue. Very soon the organism attempts to excrete these impurities by the skin.

It is inevitable that the connecting tissue becomes more and more unclean by age on the above account. But it is a big mistake to accelerate the condition of unclean senile connective tissue.

The connective tissue seems to possess more important physiological functions than hitherto thought. Research works of the last few decades started to reveal it. It is therefor very important only to use pure fats and keep clean the subcutaneous connective tissue. The food laws and the food inspections are

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very strict in order to protect the public against adulterated fats. What is the use, if we pollute at the same time our body by the habitual use of mineral oils? Rats, mice, and guinea pigs die if the adipose tissue is polluted to a certain degree. Human beings will not die, but the bowels are enforced to an additional abnormal excretion in order to balance the overburdened skin function. Our preliminary experiments prove this. We will continue these experiments for further complete publication. We will show undoubtedly that the effect of mineral oils is to produce primarily a pathological condition of the skin, and secondarily a pathological condition of intestinal excretion for partial compensation. Details cannot as yet be published in this paper.

The connective tissue, besides containing fat, is rich in sulphur containing proteins. An increased amount of impurities in the connective tissue may retard the sulphur metabolism, and lead in this way to carcinoma. Embryonal connective tissue is again rich in silicon which gradually becomes less with age. It will be a further subject of our research to prove the relationship of silicon metabolism to aged connective tissue.

English research claims an increase of carcinoma cases in those using mineral oil. The kerosene impurities of the fat of the tissue may be the basic irritation and cause as a reaction the formation of proliferous pseudoglands, which means carcinoma. Intermediary causative conditions may be a senile abundance of impurities of the connective tissues, a senile lack of silicon in the connective tissues, and a retarded senile sulphur oxidation in the connective tissue. Carcinoma is a local formation of proliferous pseudoglands in pre-senile degenerated tissues. These suggestions seem to us very important. We are now experimenting along these lines to clear up this matter. These experiments will be published later if certain results are obtained. The results up to this time, have revealed nothing, which contradicts this theory, but, on the other hand, corroborates it very strongly.

CHAPTER XII

VEGETABLE OILS AS FECES SOFTENERS

We want to limit ourselves to useful considerations for the practitioner. We have, in this purpose, to reconsider a few points of the previous statements.

The common plants produce the contained materials by their own synthesis. They need only stored material for the time of rest of plant life. Carbohydrates are in most cases a handy form of stored material. We will learn that within the family of Euphorbiaceal where the castor oil plant belongs, there are abundant characteristic starch corpuscles in the milky juice. Plants producing seeds must store in very small places very concentrated food for the first life of the daughter plants. The seeds always contain a mixture of proteins, carbohydrates and fats. Different materials predominate in different seeds. Some plants are specially organized to dissipate the seeds to great distances. Many mechanisms facilitate this purpose. Less weight with the same amount of stored energy is especially good. This is done by an increased percentage of fat in the seeds. Tropical plants have a danger of exsiccation of the seeds with loss of germinating possibility. An increased percentage of fat is also there as a protection for large seeds. An exemplification is the cocoanut. These two reasons bring the fat of some seeds far over 50% of weight.

Starting from the lowest cryptogamic plants up to the highest ones, the spores and seeds are often very rich in fat. We learned above that these fats have very different chemical constitution in different plants. The animals get the main supply of their fats from vegetable seeds and select for storage only fats derived from three fatty acids. Other fats become less useful or must be excreted as waste products according to the degree of difference from these three acids.

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The different chemical constitution of seed fats originates from the chemical difference of the other chemical constituents of the same plant. The plant fats are only special condensation products of further reduction for the intermittent rest in the seeds. They were carbohydrates or proteid constituents in the former metabolism of the mother plant and will become again the same or similar carbohydrates and proteins in the first organs of the germinating daughter plant, characteristic for species or genus or family. These facts make it self-understood, that between the chemical structure of carbohydrates, proteids and fats of the same plant, some relationship must exist. Mustard oils and allyl derivatives are common in plant families where the seeds are rich in olein. The double bond between two carbon atoms is persistent in the mentioned compounds.

The chemical products of the entire genus or even of the entire family or maybe of a number of related families are very similar. The chemistry of castor oil is better understood if we consider the products of the congeniality of the castor oil plant.

Of the feces softeners, the dietetic softeners are real food and do not disturb the balance of metabolism. A drastic drug may cause some loss of undigested food in the diarrhoea.

The fats are the only foodstuffs able to a high variation of percentage within the body. Abnormal fats are for this reason desirable softeners of the feces, if they have very close relationship to the chemical structure of the three regular fatty acids of human metabolism. An oxyfat with 18 carbon atoms but not with an excessive number of oxygen atoms shows these most desirable properties.

Of this class of most desirable feces softeners, ricinoleic acid is the only one contained in a natural product and obtainable in large quantities. It is contained in castor oil. A consideration of these sentences leads to the point that castor oil is, as a general feces softener, preferable to all other drugs. The introduction of mineral oil is only a trial to replace the best feces softener by a cheaper one, which seems to the layman somewhat similar to castor oil, but is in a chemical sense quite different, and in a pharmacological sense, an obnoxious poison. The next step will then be to consider castor oil, where we will find an existing different between castor oil and castor oil. It is necessary to select the best castor oil, and still again to purify this.

CHAPTER XIII.

HISTORY OF CASTOR OIL

Castor oil comes from a plant which is named in modern science Ricinus communis.

Different parts of this plant, and the oil, have been used since ancient times. It is a native of Africa and Asia. Its oldest use is known in the inhabited warm valleys from Egypt to China. Mesopotamia and Babylonia are excluded, if Herodotus made no mistake.

The entire oriental history of the castor oil plant shows the continuous comparison of the castor bean and the parasitic tick. The different names of the castor bean show this fact throughout the different languages.

The language of the hieroglyphics calls the lice, including the tick and the castor-bean "qiqi." This word has gone over to the later language of Egypt of Christian times, to the so-called Koptic language and its different dialects in the shape of "kyki." The Greeks learned the use of castor-beans as laxatives from the Egyptians. Their authors adopted the Egyptian word. Herodotus, Dioskurides, and Galenos use "kiki" as their Greek name for castor-bean and tick. The Greeks lengthened the word by means of an adjective suffix "kikinos." This shape is seldom found. Oftener the Greeks changed the first letter forming "rhikinos," which in Latin shape became "ricinus," the modern scientific

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name. All these different shapes of this word unite the meaning of castor-bean and tick.

The name of the castor plant is in the language of the hieroglyphics "degm." The Papyros Ebers contains on the 47th column a remark that an old, i. e., old in the time of the compilation of the Papyros Ebers—special issue existed concerning the usefulness of the castor oil plant. The Papyrus Ebers gives an extract of this tract 3,500 years ago.

The names of this plant in the old Semitic languages differ from the Egyptian name. The Phoenicians called it "keroa." The shape differs little in the later Semitic languages. It is kept in the Syrian name "qirua" and in the Arabian "chirwa." Again this word came in a modified shape in the Greek language. It lost its first vowel and became enlarged by a suffix to the shape "kroton." It includes again the double sense of tick and castor oil plant. The modern scientific botany has transferred the name "croton" to another plant of the same family. We used this word repeatedly above.

The oldest original medical book kept in the United States of America is the Papyrus Hearst, preserved in the Berkeley University of California. The castor oil plant is there mentioned three times. The first place recommends its use for four days in cases of angina. The second prescription is in dysentery or typhoid fever in the initial stage. The third prescription was as an external lubricating mixture.

A mistake in the identification of the old plant is impossible, as Dioskurides has described two thousand years ago the castor oil plant in every detail.

The old time physician used the leaves and the beans and the oil.

The oldest oil of all oil containing seeds, was a cold pressed oil. The medieval and modern technic introduced warm pressed oils. In olden times it was often used after boiling with water and its subsequent decantation.

The oldest times of Egypt and China introduced castor oil as dietetic fat in the kitchen. About 2000 B. C. it must have been very much used. We find it in single cases used as payment instead of money. But Behen-oil, the oil from Moringa, replaced its internal use. Dioskurides of the time of Christ declares that castor oil is not used in food or internally, but as illuminating oil in the lamps and for emplastra.

The Greek and Roman physicians and again the Arabian of medieval time preferred the use of the castor beans for internal purposes.

Dioskurides prescribed 30 beans as a single dose. He declares the nausea and vomiting accompanying their use as a difficult problem. The oldest Arabian physicians recommended 17 beans as single dose. The average dose was dropped to 11 beans in the time of the Arabian Ibn Serapion.

Many Arabian physicians have recommended some preparations from the Ricinus plant; El-Damaski, El-Huz, Rhazes, Badigoras, Ibn Serapion, El-Sherif Al-Edrisi and others. They used the Ricinus of their own country.

The European physician had to import the necessary ricinus preparations. After medieval times, the importation of castor oil from the Mohammedan countries to the Christians ones was difficult. The Mohammedans did not use castor oil internally. It was almost forgotten until later its use again started. Additional uses were found, lubricating, fly paper, and for prohibiting the brittle dryness of oils or similar materials.

From the illuminating oil to the lubricators and to the medical use, the introduction of petroleum products were cheaper and pressed the castor oil out of use. Also, its use in soap making has declined.

It is not to the advantage of sick people if the price decides the use of either of two drugs. A decreasing of the price often decreases the care in manufacturing. The old cold-pressed oil yields a smaller output. In the modern manufacturing houses, the seeds are first

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warmed slightly and then pressed. The average yield of high grade oil is from 40 to 50% in weight. Care must be exercised in the amount of heating of the seeds, else an increasing amount of ricin is added to the oil. Unscrupulous manufacturers have been known to adulterate the castor oil by cheaper vegetable oils, and to add small quantities of ricin to adulterated oil. Again, "seconds" or sorts of castor oil, inferior qualities of oil, are found in the market.

The cheaper price of mineral oil and the descending quality of castor oil through competition, the over-heating to obtain larger yielding and the other circumstances again brought the castor oil almost out of medical use. Our conclusion from the above is that castor oil is the best theoretical feces softener. To be the best practical feces softener, it is necessary to use really first class castor oil. Castor oil that the U. S. Food and Drug inspector may pass for the manufacturer of fly paper is not included in our above claim that castor oil is the best feces softener.

CHAPTER IVX.

NATURAL HISTORY OF CASTOR OIL

Ricinus communis is an Euphorbiacea by family, and a Generiales by order.

The Geraniales families contain many famous drugs in every single family. That shows that the general metabolism of kindred plants have a tendency to produce extraordinary by-products of psysiological and toxicological action, unknown for members of other families and orders.

The special Euphorbiacea have joined vessels for milky juice. The average families do not have milk vessels. Some families of different orders have either jointed or non-jointed vessels. Especially families not limited to a single climate have these vessels. The vessels enable a quick growing where ready material may be quickly transported in liquid condition from one part of the plant into another.

But this abundant liquified material is again a danger. Many animals like to get ready liquid food. The single plants of families with well developed milk vessel systems are enforced to self-protection by mechanical or toxicological means. We will find that when we consider the whole family of Euphorbiacea or the special ricinus plant.

The family of Euphorbiacea contains more than two hundred genera and three thousand species. They are, as other families with milk vessels, distributed over the entire earth, most abundant in the tropics, gradually decreasing with the temperature, and wanting in very cold regions. They have a great ability of adaption to environment, so that some of them thrive equally well in the most arid deserts and amidst luxuriant floras.

The milky juice of Euphorbiacea carries abundant starch, forming very microscopical granules of characteristic shapes. Dissolved in it are resinoid substances, which, when coagulated, produce rubber. The seeds of Euphorbiacea are rich in fats and albumins. The by-products of self-protection against wasting milky juice are insoluble cellulose, insoluble resinoids of the rubber group, or of coloring properties, or locally irritant fatty acids or locally irritant soluble proteids. Often more than one of these products are present simultaneously in the same plant, some times distributed to different parts or products.

Two of the known best rubbers are yielded respectively by the manihot and the heveas. Other manihots yield the highly important food cassave and its starch, tapioca. Some of the fruits are edible, and some of the timbers have special uses.

Numerous species yield useful fixed oils and several dye-stuffs are obtained.

The amount and strength of irritating by-products increases in many species to the point of rendering them violent poisons, either externally or internally, or both. These irritating principles may exist either in the milky juices or in al-

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bumins of histologically fixed tissues. Even such violently acting juices have often been untilized as escharotics or epispastics. Among such juices we may mention those of Hura, Euphorbia heterodoxa Muell (Alvelos), and other species of this genus, Ippomane, Toxicodendron, Opthalmablapton, Excoecaria. The latter acts violently, even through its smoke.

Juices, mostly milder in their action, are used internally as irritant purges, but many of them in overdoses may prove emetic-cathartic poisons. Rarely do these purgatives consist of the extracted juice, as in Euphorbium, but usually of the tissue containing the latex, fresh or dried, or medicinal preparations of them.

Among the useful Euphorbiacea may be mentioned the root of Jatropha macrorrhiza, of Stillingia, of Euphorbia Ipecacuanha, Euphorbia Lathyris, Euphorbia marginata, Euphorbia corollata, Euphorbia Cyparissias and other species of this genus. The herbage of Mercurialis, the species of Tragia and Joannesia, and various parts of many species of Croton and Phyllanthus. Many of the latter are also used as fish poisons.

In other cases, the purgative constituent is or resides in a fixed oil, usually of the seeds, as in croton, castor and curcas oil.

Powerful albuminous poisons usually also reside in these seeds.

The special biological chemistry of the Euphorbiacea shows a tendency to form large amounts of oxyacrylic acid. This acid cannot be stored in a living plant in large quantities. The different genera and species of Euphorbiacea are enforced to form secondary new products from the primary oxyacrylic acid. This is administered in different ways leading to fats, carbohydrates or proteids. But every one of these secondary products shows still the relationship by double bonds or additional hydroxyls or both.

$HO\text{-}CH_2\text{-}CH_2\text{-}CO_2H$ is the formula of aethylenlactic acid which seems the first characteristic reduction product of the assimilatory life of Euphorbiacea. If this compound is heated, it splits water and becomes $CH_2{=}CH\text{-}CO_2H$, the acrylic acid. Also, the higher paraffin-oxycarbonic acids and vice versa.

Ricinoleic acid is an oxyacid and an olefinic acid at the same time. It unites the properties of the crotonic acids twice in the above sense, but in different shape.

The above aethylenlactic acid may also be chemically called hydracrylic acid. A reduction of this hydracrylic acid is allylalkohol. Allyl derivatives are very common in different families of the vegetable kingdom. The garlic oil and the mustard oil belong there. They come from Liliaceae and Cruciferae. Both families show in a similar way allyl derivatives, as Euphorbiacea show acryl derivatives. In a biological sense, the primary reduction of Euphorbiacea is one degree less than the reduction of Liliaceae and Cruciferae. This primary difference remains through all the secondary derivatives of the members of these families.

We find also in the families of Liliaceae and Cruciferae a tendency to form oil in the seed. As Allyl is the reduction of Acryl, the seed fats of Liliaceae and Cruciferae resemble the reduction products of Castor oil.

A complete consideration has to take first Allylalkohol. The allyl derivatives of the food are soluble in the lower fatty acids and are volatile. They are not really harmful for the metabolism. They are easily excreted by the perspiration. This is the reason of the offensive smell of habitual garlic eaters. The aldehyde of allylalkohol is acrolein, which irritates the mucus membrane of the respiratory tract. Other important products are hydracrylic acid, acrylic acid, crotonyl derivatives, and methylated crotonyl derivatives. A thorough study of the pharmacodynamism of these compounds, already precipitated in the literature, clears up the entire pharmacognosy of the Euphorbiacea.

The relationship of Glycocoll to Cholin, Neurin and Betain and especially

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Cholin as being non-poisonous and Neurin as poisonous, shows the relationship of paraffin and olefin derivatives to related aminoacids and albumins and of their non-poisonous paraffin derivatives, to closely related poisonous olefin derivatives. Again, the less poisoning properties of increased molecules must be mentioned. Details cannot be explained here. But every one of these details lead to the conclusion, that oils of large molecules of the family of Euphorbiaceae must be the best feces softeners. The natural by-products of low molecules will increase this softening effect. But they are not desirable on account of their poisonous effects.

Practical chemistry has some standard methods by which it identifies certain fats and oils with some idea of their chemical constitution. The main figures are the saponification number, the iodine number, and the acetyl number.

The acetyl figure of castor oil is an exception to all the other natural oils. Some cotton seed oil may reach the figure 25. Other oils stay below 10. The best castor oil of the market is 156, which is 95% of the theoretical pure oil. By artificial addition of oxygen to chemically pure castor oil, the acetyl number can be still increased, and the castor oil improved. In this sense, the best feces softener is a purified castor oil with the acetyl number 164.6 or higher.

Propaedeutics of the Pharmakotherapeutical Chemistry.

FELIX VON OEFELE, M.D.,
New York.

CHAPTER V.

GENERAL CHEMISTRY OF THE RLOOD

It is difficult to separate the blood into carrying stock similar to the trolley cars and into carried material. A second subdivision is practically more important.

The human blood has to be considered as a certain separated part of the general lymph, containing in this special case particular movable histological units in suspension. These units are very small and very frequent. Then too, the blood is included within a limited vascular system, and is separated by this device from the remaining common lymph.

The blood plasma almost resembles the common lymph. It is sufficiently fit to carry liquid food and soluble solids. But it is unfit for the exchanges of gaseous materials, especially unfit for transportation of oxygen (and carbonic acid). For this reason the duty for exchange of materials and the duty for exchange of gases belongs to two different parts of the blood. The blood is an organ which may be called two in one. The arthropodes, as far as they are aerobic, show a different organization for the oxygen supply of the single organs. Because of this circumstance, their anatomical construction lacks almost the walls of circulatory organs and histological units resembling the red blood corpuscles of human beings. Other animals have a similar blood and a similar oxygen supply as human beings.

We must never forget the twin character of human blood, explaining the constitution of the blood in regard to excretion and absorption. This conception has to be kept in mind, especially when we consider constipation and diarrhoea, in regard to physiological and pathological metabolism.

In anticipation the depilation of sitting proffessionals and after typhoid fever may be explained. People of sedentary occupations keep the feces a

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longer time within the colon descendens and with the flexura sigmoides than average people. There the putrefication of intestinal contents reaches a high degree. An increased amount of indol and skatol is formed. The condition of typhoid fever makes the same products during diarrhoea. In both cases the original branches of the vena porta absorb a higher amount of skatol and related compounds. During the passage of the blood of the vena porta the intoxicating properties of indol and related compounds are reduced by the action of the liver combining them to ether compounds of the sulfuric acid. These less poisoning compounds of skatol and related bodies with etherified sulfuric acid are finally excreted by the urine. Their amount may be measured by the degree of indican test. Principal constituents of the hair use sulphur and silicon. In the indicanuria of sedentary occupations and after typhoid fever, the ready sulphur is used up for detoxicating of urinary constituents. No sulphur is left for growing hair. This depilation originates from a systematic sulphur starvation.

The conditions and functions of the bowels and conditions and function of the blood cause baldness in this case. The principal sulphur, the waste products of the skatol group, the detoxicated products shipped to the kidneys, are contained in the serum of blood. A cognizant treatment of the concerned baldness will be an internal treatment to influence the constitution of the blood, meaning in this case, the serum of the blood. Where the roots of the hair have not yet been entirely destroyed, we may send such a patient to a sulfurhydrogen mineral spring, administering, in the morning fasting, a mixture of whey of milk and sulphuretted mineral water.

A physician who does not know the entire chemical condition concerned, will call the recommendation for this treatment of baldness quackery.

The depilation of a chlorotic girl of sweet fifteen is different. The decrease of amount of red blood corpuscles and haemoglobin causes commonly in these cases an irritation of the left ovary, and irritability of the pale mucosa of the colon descendens and deeper intestine with following coprostasis. The formation of excessive skatol and the other effects are similar to the above cases. As far as there is a pathological condition already of the suspended particles of the blood, the secondary trouble of the function of the serum may be of less importance. Water of a chalybeate spring mixed with real cow-warm milk, in the morning, may again cure this partial baldness, influencing the blood constitution, but meaning in this case the suspended red blood corpuscles. A sulphuretted spring may be harmful in this case, by the influence for a shorter life of the single erythrocyte, a contraindication for chlorosis. Magnesium sulfate is contraindicated too; after the laxative evacuation an increased irritability of the lowest intestines and the left ovary will cause a secondary increased indicanuria, without stop of the depilation. I never did like to prescribe morphine, but there may be a reason for the first days of the chalybeate cure to administer small doses of morphine in the evening time; it will not be contraindicated for the chlorotic girl, may decrease the irritability and help the stop of falling hair.

Morphine is entirely contraindicated for the baldness of sedentary occupations or for typhoid baldness. Magnesium sulfate is an adjuvans in these cases of baldness. The consideration of cosmetic by-effects is very important for high-class patients and particularly for the female clientele. The symptoms of increasing and decreasing depilation and its treatment, together with the primary sickness, has to be considered with the chemistry of the skin function and again with the chemistry of decomposition within the intestines, but cannot be understood without the right conception of the twin nature of the blood.

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CHAPTER VI.

GENERAL CHEMISTRY OF THE BLOOD CONTINUED

That was autotoxia by enterogenic putrefaction. Another pathological condition is spoken about; it is excess of uric acid. The chemical conception of excess of uric acid is absolutely unclear and mixed for the average practitioner. The average healthy man excretes uric acid through the urine, containing about 1.5 per cent. of the entire nitrogen of the urine. The liquids and the tissues of the body ought not to contain over 2 per cent. uric acid, calculated to the contained urea. Fishes, snakes, birds and other animals produce remarkably less urea and principally more uric acid than human beings, on account of a lower and slower oxygen supply. On the other hand, the human urine is less fit for uric acid excretion than the excretory organs of the animals mentioned. There are two contrary pathological conditions of uric acid excess. In an atavistic condition the real production of uric acid may be increased in comparison to the average human development. In a premature advancement of development of the human race, the solubility of uric acid compounds in the human liquids may be decreased to that point that an insoluble excess of uric acid must be retained in the tissues.

If we speak about "too much uric acid"—this expression is very often used by professional men, meaning a gouty condition—and if we want to be scientifically correct, the only cases included are where the production of uric acid exceeds 2 per cent. of the nitrogen metabolism. By thousands of quantitative analyses, this condition is found in chlorosis and anæmia, but never in gout or rheumatism. The insufficient dissolving power of urine and blood for uric acid is the condition found by analysis for gouty and rheumatic people. Both are conditions of constitution of blood. The excessive production of uric acid originates in a decreased function of the red blood corpuscles. Either their amount is insufficient or they are unfit to carry the normal amount of oxygen by reason of some pathological condition. In these cases the human tissues, insufficiently supplied with the necessary oxygen, produce more uric acid and less urea than normally. In the same cases the excretion of potassium through the urine is pathologically increased. Other conditions join. In chlorosis and anæmia we find commonly an increased dissolving power of urine and blood serum for uric acid. A very common statement in these cases is an increase of uric acid present in the urine up to three times of the normal amount, but the urine never forms a precipitate of uric acid or urates.

It is particularly the urine with decreased amount of total uric acid where we find the precipitates of urates, of chronic conditions. The blood serum has to carry the uric acid from the tissues forming uric acid as oxidized product to the excreting kidneys. Sodium salts predominate in these cases in the blood serum—potassium becomes restricted to the contents of blood corpuscles—and the percentages of oxy-fatty acids of small molecules is increased. Uric acid remains undissolved in certain places in the organism. The peculiar behavior of uric acid acting as basic and acid radical and forming hemi-, normal- and bi-salts and still intermediary products with variations of solubility, makes the paradox effect of the so-called Pfeiffers uric acid filter. But some modern research made incredible mistakes in this regard. The literature shows claims of uric acid determinations of the blood finding, what they prejudiced, that blood of gouty and rheumatic people contained a higher percentage of uric acid than average cases. The determination of uric acid from the blood is very difficult and the alluded to statements of the literature are all wrong. Some constituents of the blood, increased in gouty cases, have been tested repeatedly in my labor-

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atory and did not respond to the murexid test. The murexid test has been known for many decades and is the one recognized for the identification of uric acid. The continuous absence of the murexid test for the isolated constituents, determined quantitatively as claimed uric acid, is an evidence for the mistaken research. It is an old statement of Pfeiffer that the uric acid amount of gouty people, produced and excreted the year round, does not exceed the amount of uric acid of average people. My statements of repeated analyses of gouty patients of Dr. Bullinger deny absolutely an increase of the uric acid contained in the blood. The real increase of uric acid is that retained in the tissues by decreased dissolving power of the blood serum, a blockade of excretion.

An exception and intermediary condition is every acute febrile condition. A higher amount of body nitrogen is used up and becomes oxydized. The oxygen supply is insufficient for the increased oxydation. The qualitative degree of oxydation is less in this condition. The ratio of uric acid to urea increases in febrile conditions and at the same time the dissolving power of the blood serum for uric acid decreases. Particularly in pneumonia cases is this condition found. We all know that the urine of these conditions forms a heavy precipitate of urates. But this happens for a short acute condition only and the equilibrium of uric acid metabolism is soon restored after the crisis.

Chlorosis and gout are chronic conditions in connection with uric acid of contrary character. The pathological location of chlorosis is situated within the red blood corpuscles. The primary place of pathological anatomy of gout is the blood plasma, but not in the sense of overcharge of uric acid, it is in the sense of lessened solubility for uric acid.

There is again necessary a clear perception, dividing into blood corpuscles and blood plasma, in the treatment of gout. Radium is often recommended for therapy of gout and claimed as an oxydizer. That means that Radium is a treatment correcting the function of the circulating red blood corpuscles. Radium may be a good preparatory treatment in gouty cases. The practical experience indicates this idea. On the other hand, Dr. Bullinger, who, to a certain extent makes a specialty of the treatment of gout, and uses almost the most radium for injections, gives some atophan derivatives, three days after the radium, to get rid of the retained excess of uric acid. Radium is a stylish remedy. Uranium and other radio-active elements ought to be used by the profession.

This reminds us of very old therapeutic rules. The Papyros Ebers and other hieroglyphic text-books on medicine contain prescriptions, partly for one day, partly for four days. The cuneiform texts show one and three day prescriptions. Doekoen Djawah is a modern compilation of the therapy of Malayan population. There again the one day and three day prescriptions are found. Egypt and Babylonia exchanged continuously the figures three and four and vice versa on basis of astrological superstition. The Egyptians divided the year into three seasons of four months each; the Babylonians had four seasons of three months each. Plato, the Greek philosopher, declares it to have been an Egyptian law that a physician had to treat sick people by a combination, first, of a one day alterative, followed by the principal medicine during four days. We find these initiating alteratives often used in the medieval therapy. The alterative have often been laxatives or vomitives, followed by more mild effects of drugs.

Radium, intravenously, may be the most modern alterative treatment for gout and rheumatism, but the real treatment has to be understood as a solvent for uric acid circulating for sufficient time in the blood plasma and extracting the excess of retained uric acid from the tissues. Mud baths and mud cataplasms, particularly iron mud, are other

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alteratives.* Local application of formicic acid is an old alterative for gout, subcutaneously administered for centuries, by bee stings. In later chapters we will learn that the primary condition of the serum influences the analgesic treatment of attacks of gout. Morphine and similar preparations are rarely used; they are not efficient. But colchicum, belladonna, hyoscyamus and chloral hydrate may be useful narcotics in this condition. The disagreement of theoretical and practical treatment of gout is principally based on the wrong expression of *diathesia urica*. A correct perception of the blood prevents mistakes in the treatment of gout.

Tophi of gouty people have been analyzed. There concentrations of urates have been found. Old Egyptian mummies, showing tophi, have been analyzed with the same result. Every one sees the close relationship of gout and rheumatism. But never, up to date, has any local rheumatic manifestation been found with a chemical evidence of local concentration of retained uric acid. All our ideas about rheumatism are guesswork. With less basic proof, the *diathesis urica* rules some fancy theoretic therapy. What a physician claims to be scientific therapy of rheumatism is mere bluff of deceived deceivers. In average cases of rheumatism I no longer believe at all, that an anatomical or chemical alteration exists in the place where the patient claims the pain. We know that in the case of the hurt elbow the pain is felt in the little finger. I can not prove it for every case of rheumatism, but I believe that rheumatism is generally a similar local paraesthesia. In many cases I have evidence. In many cases of rheumatism of the upper or lower limb of the right side I found patients with gallstones or other disorders of the liver. The influence of decreased solubility of urates to the liver and related mucous membranes has been found in these sick people. The same condition of the blood plasma we learned for gout repeats for these cases of rheumatism and may be supposed for all cases of rheumatism. On this theory gout and rheumatism are the same pathological conditions, where the gouty feels the pains at the correct sick place, and the rheumatic projects the pain, by paraesthesia, to a peripheric organ. Other cases of rheumatism I have traced chemically for the pathological place. Very often abdominal organs are the real pathological location of rheumatism, but the pain is generally felt within the muscles of the extremities of the same side. As far as we get a correct conception of the constitution and function of the blood plasma and as far as we may trace local chemical anomalies of rheumatics by sufficient clinical analyses, we will be successful in our search for scientific ideas about the treatment of rheumatism.

Particularly salicylic acid and its chemical derivatives are very weak antiseptics, but powerful enough for a restricted antisepsis within the intestines and neighbor organs, without remarkable local harm. This local antiseptic influence of salicylates enables them to become antirheumatics where the rheumatism is a peripheric paraesthesia of an abdominal pathological infection. Salicylic acid or its derivatives never circulate in a sufficient concentration to influence peripheric muscles and their own local sensations. It concerns the blood of the vena porta principally. The chemical constitution of the blood is the basis too, for the perception of treatment of rheumatism in this new view.

CHAPTER VII.

GENERAL CHEMISTRY OF THE BLOOD CONTINUED

There is, in the aeronautical professional journal called Aircraft, August, 1916, a short article of the author recommending, on a basis of experimental and theoretical conclusions, an ascension twice a week by aeroplane, as a possible treatment of the near future. Aviatrics

*The writer has analysed and found very powerful the iron water and iron mud of White Sulphur Springs, Sullivan County, New York.

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really agreed with the experience, that extremely advanced consumptives started, for the short expected remaining life time, sporting by aeroplanes and died because of sporting accidents, but in the meantime entirely recovered from consumption. Independent in the meantime, Erich Meyer published in "Deutsche Medicinische Wochenschrift," examinations of the blood of aviatrics. He found the haemoglobin and the number of red blood corpuscles augmented after ascensions. This effect persisted many weeks after one ascension. A concomitant angiospasmus cutaneous may exist, making the skin pale with the wrong impression of anaemia.

Simple automatic regulations are seen by these external influences of relationship of plasma and corpuscles. This relationship is only one of many properties of the blood. Repeated exact chemical analyses of the blood of different pathological cases, tabulating the results, enables the comparison of following cases of examination. Other possibilities, not yet useful, for correction of decrease or increase of single constituents of blood may be found for progress and enlargement of therapy.

The percentage of serum may be calculated by serum obtained. Further analysis of isolated serum is possible. The analysis of blood corpuscles for clinical purposes has to be replaced by the analysis of coagulum. The coagulum is a higher concentration of red blood corpuscles, soaked by a certain amount of remaining serum, conglutinated by fibrin, a precipitate from the plasma.

The variability of chemical constitution of separated serum, as well as coagulum, of pathological cases is more remarkable than the literature printed hitherto impresses. The published results of blood analysis concern the blood of healthy students of the Caucasian race, particularly French and German. Sex, age and health restrict the variability of amounts of constituents remarkably. My own analyses concern patients and exceed the diversions from the average of health.

The conditions for separation of serum and coagulum have to be homogeneous. This is possible by administration of centrifuge, ice box and the same length of time of 24 hours.

I have obtained from 5 to 60 per cent. serum in different cases, with the average of 38.75 per cent.

When the coagulum remains separated in the ice box over 24 hours, a small additional amount of serum, of red coloration, is separated. In other cases, where serum and coagulum have been together over 24 hours, a small amount of the serum has been found reabsorbed by the coagulum.

In my cases it was found that generally the percentage of serum obtained from the blood increased where the serum formed is, to a certain extent, an equilibrium formed between the hygroscopicity of the salts of the plasma and of the hygroscopicity of the fibrin. During the first hours of digestion of food, ashes pass from the body liquids into the intestines and organic material passes from the digestive tract into the organism and particularly into the blood. The same individual shows the largest percentage of serum in the hungry condition. A short time after feeding the amount of serum decreases.

As far as the red blood corpuscles contain principally haemoglobin, the relationship of serum and coagulum depends, then too, upon the percentage of haemoglobin, which will be considered later on.

The female blood contains less haemoglobin than the male and the blood of the gravida still less. This expresses the larger need of the foetus for food exchange than for gas exchange. The oxygen supply of the foetus is difficult, by the many intermediary filtrations from the outside air to the foetal tissues. The foetal haemoglobin content is high. The activity of the foetus is low and the entire metabolism of the foetus is more a construction than a consumption of material. Gravida and foetus are adapted to the need of the foetus in a contrary direction. Details do not concern our therapeutical interest in this paper. It is

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only a statement that the foetus has the highes amount of haemoglobin and the gravida matter, the lowest amount found in physiological conditions.

In pathological cases a separate quantitative chemical analysis of the serum is indicated. A few years ago Morawitz still denied the possibility of physiological and pathological enlightenment by analysis of serum. This idea belongs to the antiquated idea of Jaksch about the unchangeable constitution of the blood. The smallest chemical research about serum is able to prove the contrary statement.

The therapy of hemorrhages may be partly understood on this basis. An old haemostaticum is the internal use of kitchen salt dissolved in water. It is understood that immediately, or after a few minutes, the percentage of sodium chloride of the serum increases. That really means an increase of percentage of serum, calculated to the blood. On the other side the decreased amount of coagulum will contain a higher amount of total solids and will be less brittle. (Sodium chloride of high concentration does not pass the pylorus and may be a vomitive.) Salt water is useful as a haemostaticum in absence of cacchexia only, with sufficient stock for good coagula. Another common haemostaticum is gelatine. During the time of digestion it attracts a high percentage of the water of the circulating blood into the digesting secretions. The suspissated blood has less tendency for hemorrhage. After the digestion the gelatin is partly rebuilt within the blood and increases the viscosity of the blood with the same effect. The different tannic acids are very well known styptica. The strongest tannic acids, best recommended for tanning purposes, are not the best stypica for internal use. The strongest ones can not enter the blood, locally reacting to the albuminous matter of the mucous membranes. If these strong tannic acids really reach the circulating blood, they form real coagulates of proteid tannates and kill by embolus. The mild tannic acids, too weak for useful tanning purposes, are the best styptica. Many of them stand tightly to the boundary of tannic acids. They do not form black reactions with iron salts and no real coagulates with albumin. These mild tannic acids make thin albumin suspensions, more similar to glue. The female sex has been acquainted, since time immemorial, with the best styptica of the local spontaneous plants. The female sex has occasion to make observations relative to hemorrhage. The scientific medicine of many thousands of years had accepted the best ones of these vegetable styptica. It was a long list. The famous Haller of the eighteenth century was influenced to declare all these styptica useless which did not turn the color of solutions of iron salts black. Really, they disappeared out of the text books of materia medica. Sanguinaria, tormentilla, viscum, bursa pastoris, hypericum, crocus and more than an hundred others remained powerful styptica in the knowledge of lay people, particularly of old women. It is a very common happening that the scientific physician fails in the treatment of hemorrhage. If he does not fail the first time, he will be successless against recidives of haemorrhagic diathesis. The old experienced neighbor woman watches carefully for this time and beats the famous physician. The scientific knows the strong styptica: ergot, hydrastis, hamamelis. Maybe he tries digitalis, alum, iron, copper or manganese. But he never learned the haemostatica growing in the meadow where his children usually play. The physician should have an idea of the class of mild tannic acids which are glycosidic acids in a chemical sense and, filling a biological need of many plants, they are found dissipated to many plants within the botanical kingdom. The old woman will know every time only one or a few of these plants by tradition of empirie. The physician has to beat the old woman, knowing the entire class of styptica, their effective principle and causa operandi.

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Epra'iam Joined to His Idols.

D. L. FIELD, M.D.,
Jeffersonville, Indiana.

No one charges "Christian Scientists" with using a cloak to claim exemption from military service! It would avail them nothing, if they did! The writer is president of an Exemption Board; and only *ministers of the gospel are exempt!* Christian Scientists are not considered ministers of the gospel!

"Christian Scientists" seem to think *Christianity* is a *science!* Christ never *healed by science; never prayed for any one's healing!* The only time he prayed was in Gethsemine and on the Cross!

The healing power was delegated to only one Apostle, and that was Peter. "I will give unto thee, the keys of heaven." "Whatsoever ye bind on earth, shall be bound in heaven; whatsoever ye loose on earth, shall be loosed in heaven." St. Luke, beloved physician; St. Matthew; St. Mark; Bartholomew; St. Andrew; nor any other, save St. Peter, ever attempted to heal the sick! "So much for Buckingham!"

Christian Science is an attitude; an emotion; and a *misconception of* God! "In the day thou eatest thereof, thou shalt surely die." Death neither respects age, circumstance, belief, prayer, desire, science, Christianity, creed, inheritance, nor anything in the animal or vegetable world! Suffering is the lot of the whole animal world. The dumb brute suffers agony also. Man has no preeminence over the dumb animal, in this!

The conceit that there is a *oneness* of God and man, is not warranted, either by the nature of mortal man, nor the character of God. God sactioned the sore afflictions of Job; who was a "just man and upright, one who eschewed evil." God said: "Do not destroy him."

Has any one the right to deny that God permits suffering and afflictions? Did not God sentence Moses? Didn't David do wickedly, and die at 70 years of age? Solomon began his reign by carrying out the will of David, by slaying numbers of men; notably Joab. Soloman died at 58 years of age,—a premature death! Herod the Great suffered with organic heart disease and anasarca. He was such a sufferer that he was prevented from committing suicide. St. Paul suffered from a crippled hip.

Suffering is not a conceit—it is a matter of fact. It is inseparable from disease, *and it is not banished by a State of Mind!* The false conceit, that there is such a relation of oneness between God and Man is preposterous! Man is of the earth, earthy; but God is omnipotent, omniscient, and omnipresent; his creations are of the mortal animal world, who perish and return to the dust from which they were made. The first man was named Adamah, because he was made from red earth! The Almighty doesn't dwell in mortality; if he did there would be no finite being!

The writer has practiced medicine over fifty years; is a professed disciple of Christ,—a Presbyterian; but in all his experience, he has never known of an instance, where prayer has arrested the progress of disease! I believe that prayer prevails in the emotional effect, and changes our attitude, and acquiescence in what befall us; *i.e.*, a reconcilliation to what we regard as God's will. However, I am sceptical about God's will, which visits agonizing suffering upon the innocent babe, and the early childhood. I can't assent to a Will that takes the mother away from helpless children; and allows intolerable *wretches* to pass on to the "sear and yellow leaf." No, God's laws are fixed; and physiologic law is one of them. The violation of such physiologic laws brings its own penalty, *i.e.*, it is self-inflicted. Therefore, if the law is violated *wilfully*, or ignorantly, the result is disease, and death. So, instead of its being God's will that one should suffer; it is expected that His laws for our own guidance and well-being should be understood and *obeyed*. We must expect disease, suffering and death.

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Western Medical Times

PUBLISHED MONTHLY BY
THE MEDICAL TIMES PUBLISHING CO.

Subscriptions, $2.00 per year, in advance. Single Copies, 20 cents.
Entered at the Postoffice at Denver, Colorado, as mail matter of the Second Class.

NOTICE—The Western Medical Times employs no regularly appointed Eastern or New York Advertising Representative and any contract or agreement entered into with any individual purporting to be such will be subject to the approval of the Home Office of this journal.

Address all Business Communications to

THE MEDICAL TIMES PUBLISHING CO.

1839 Champa St., Denver, Colo. Business Office Telephone, Main 5035.

Address all Articles, Personals and other items of interest, and Books for Review to the Editor, 128 North Center St., Reno, Nevada.

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TAKE AWAY THE SWORD.

"The pen is mightier than the sword! The pen can cut as fatal wounds, or destroy an enemy, as effectually, as the two-edged sword. It is a fearful destroyer, in satire, invective, or ridicule! It's a crusher!"

Yet, in the hand of the philanthropist, or the philosopher, it appeals to heart and intellect. It heals wounds and inspires hope! It has the magic power to turn sadness, and despondence, into joy, and new life. It records the sublime thoughts and eloquent words of orators and statesmen; as well as the "flashes of merriment, which set the table on a roar."

Editors, like lawyers, are accustomed to exercise a sort of *right* to write or say what they please; and none can say them "nay!" Editors, however, are fortified against danger by the tripod, and the sanctum, sanctorum! Sometimes an

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iconclastic editor gets it between the third and forth ribs:—*i.e.*, he gets his "quietus."

A gander's wing furnished the pen that wrote the Declaration of Independence. The writer well remembers when quill pens were used exclusively; and the most beautiful and legible hand-writings were executed with a quill. Many books were printed from quill pen manuscripts. All the historic documents were brought from goose wings.

For many years, no metal pens were known. Even when steel pens came into use, many persons continued the quills from a belief that more flourishes, and prettier chirography could be made with the quill. Quill pens were contemporaneous with the tallow candle, and even when the sperm candle came to supplant tallow, the quill pen was in vogue, some time after that. To make a good quill pen, was quite an art; but when they were well made, and polished smooth, they were *great*.—*Field.*

READ.

In the "Bonnie Brier Bush," Dr. McClure says: "I've had leetle time to read, and nae time to travel; and I couldna keep up wi the new medicine."

The physician's of today are living in the midst of a flood of text-books, and current medical literature; yet the habit of reading is sadly neglected by many of them. Current medical journals contain new discoveries; and are full of the results of observation and experience. Some of the most eminent medical men, the world over, are among the contributors to advanced medical research, and careful investigation. Therefore no medical man can keep abreast of the times, who neglects to read and study.

Unless one reads and mentally digests such reading, it will not do much good. All the great authors were of the studious and investigating sort, and by so delving, have advanced the science to its present state. They advanced it by ambitious effort, and an untiring assiduity. There were no drones in such hives. They were all workers in the fields of scientific research.

Today, many professional men are like pettifogging lawyers—satisfied with mediocrity.

Men who graduated from medical colleges fifty years ago had no such advantages as the medical men of these later days enjoy.

Science, in every department, is advancing by "leaps and bounds," and the man who lags behind is left. Read, and keep up with the profession.—*Field.*

CLOGS.

There are physicians who are clogs in the wheel of progress! They are "agin" anything new; and continue to jog along in the same old rut. They virtually confine their remedies (?) to calomel, castor oil and quinine. A *coal tar derivative* would make them throw a fit! They can't realize that *anything* is all right, if given intelligently, and discriminatingly. But they are "afeared" they might help the undertaker.

Doctors should be alert and well informed.—*Field.*

WAR HORRORS.

"And there shall be wars, and rumors of wars; men's hearts failing them from fear; distress of nations,—with perplexity."

And it is amazing that any potentate can compel his subjects to "wade through a slaughter house to an open grave." Millions slain; permanently disabled; and their homes, and all their earthly possessions swept away, all because any *one man* has such power.

It is something awful to think that a citizenry will submit to such wholesale carnage; and that where no *good* purpose is apparent. It is prompted by lust of power, pride and supreme cruelty. Human life is held cheap. Ambition, self-aggrandizement, and reckless quest of gain, prompt a tyranical monarch to re-

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quire a wholesale slaughter, to further some causeless purpose. The autocrat *must go.*

The time is coming when the heresy, known as the "divine right of kings," will be overthrown, and self-government —the "*vox populi*"—will prevail. If this world war the "Armageddon," it surely will be that all governments will be by the free will of the people. It *must* come, or this horrible world war will have been to no purpose. Republics are sure to supplant *one man* rule.

The slogan should be, "*Vox populi,—Vox Dei.*"—*Field.*

DANGERS OF CITIES.

The demands of civilization, and the genius of the age, have made transportation from center to circumference of this teeming, facile, and rapid age beyond the most sanguine speculations of the early settlers. The constant flux and reflux of people, animals, and things, through these channels, make the introduction of portable disease; sooner or later, almost as certain as the succession of the seasons.

But the increase of population, and the development of civilization, carry with them the germs of disease; they also develop the study of antidotes, and preventive measures. The knowledge of the laws of prevention will lengthen the average life of the citizens, and add to the economic value of the same. The knowledge of sanitation is of a compound character largely the knowledge of sanitary laws, is required of the physician.

The people know these laws in a general and indifinite way; but very nearly the total of them look to the Medical Profession, with more or less confidence to protect the community from disaster springing out of unsanitary surroundings, and conditions; and, in threatened epidemics upon the physicians they depend to formulate measures to guard the public health. It is a herculean task, if not impossible to get the denizens in over-crowded tenements in our large cities, who almost of necessity, because of poverty, cannot protect themselves from disease; but such a condition of things, makes such places foci for the generation and dissemination of diseases, which make havoc all around. In smaller communities where sunlight and pure air are so abundant; there would naturally be hygienic conditions, the death-dealing maladies of the large urban communities, are not known. "I will flee unto the hills, from whence my strength cometh."

The filth of large cities, and the poisonous sewer gases, with the dirty tenement dwellers, are prolific causes of infections. It would be as easy to move Gibraltar, as it would to redeem such plague spots from the wretched conditions so prevalent. The only protection would be a sanitary cordon of isolation, of such places.

The indifferences of the masses, as to the necessity of sanitation is the hardest obstacle to overcome. They are not concerned for themselves, and care nothing for the welfare of others, who would be exposed to danger, because there are those who ignore and disregard sanitary rules and laws.—*Field.*

AN IMPORTANT DISCOVERY.

Editor "Western Medical Times": I asked an ex-surgeon of the U. S. Army this question: "Suppose a man comes before you and says he is in *pain,* how can you tell if he is in pain or not?" His reply was, "You *can't* tell, you have to take his *word* for it."

I have found out that when there is *pain* in any part of the body there will be a *tension* to the pulse, and *contraction* of the pupils of the eyes. *No tension* to the pulse, *no contraction* to the pupils of the eyes, *no pain!*

I have also learned, by experience, that there is a great difference between the pulse of the right and left arm. The pulse of one arm tells us of the vitality of the constitution of the patient. The pulse of

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the other arm tells us of the local trouble, the real, the true condition of the sick person.

When the time comes by proper treatment that the pulse in both wrists are *alike, full, strong,* and *regular,* the patient is near well.

Therefore it is always best to read the pulse of both wrists. Remember that when you read a person's pulse Dame Nature is sending a message over the wire (artery) to you and *it is your business to interpret that message correctly! If not, so much the worse for you and for your patient!*

I believe that the above is the most *important* discovery of the century. *Try it out* in your daily practice, for there is *more in it* than you may realize.

1331 Main Street.

MOBILIZING THE PROFESSION FOR WAR.

Until the entire medical profession of the United States, or at least those who are mentally and physically fit and within the age limit, are mobilized within the Medical Reserve Corps of the United States Army, not until then can we give to the Surgeon General that efficiency which he so badly needs in having a large body of medical officers upon whom to draw.

You may never be called; at the same time your joining the Medical Reserve Corps and placing your services at the command of your country, clearly indicates the patriotism which the medical profession, as a whole, should evince and which we must manifest if we are to win the war.

It is not only for the combatant forces that medical officers are required but for sanitation, hospital camps, cantonments and in other departments where the health and life of the forces are dependent upon the medical officer.

We have within the profession a sufficient number of doctors to fully meet the requirements of the Surgeon General's office whatever they might be, but to be of service, you must join the Medical Reserve Corps to enable you to meet the appeal which is now being made for a large and efficient Medical Reserve Corps upon which the Surgeon General may draw as requirements demand.

Every doctor must realize that success depends upon a carefully selected and thoroughly trained body of medical officers. By careful selection, we mean the placing of a medieal officer in a position where he is best fitted for the service, and only by having an immense corps or the entire profession mobilized upon a war basis, can we serve our country to the best possible advantage.

This mobilization of the entire profession should come from within the body itself, but every physician coming within the requirements of the service, as to age and physical fitness, should seriously consider this suggestion and not wait for complete mobilization but apply at once for a commission in the Medical Reserve Corps of the United States Army.

HATES THE KAISER.

My Tuesday are meatless,
My Wednesdays are wheatless,
I'm growing more eatless each day;
My house it is heatless,
My bed it is sheetless;
They've gone to the Y. M. C. A.

The bar it is treatless,
My coffee is sweetless,
Each day I grow colder and wiser.
My trousers are seatless,
My sox they are feetless.
My God how I do hate the Kaiser!

—H. C. L.

Mr. Joseph L. Turner, Head Chemist of the Bristol-Myers Company, Brooklyn, has been unanimously elected First Vice-President of the New York Local Branch of the American Pharmaceutical Association.

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BOOK REVIEWS

NOTICE:—It will be the pleasure of the WESTERN MEDICAL TIMES to furnish any book, reviewed in this department, to its readers at the publisher's price, delivery prepaid. If any single order covers two books, the purchaser will be given in addition, a year's subscription to the WESTERN MEDICAL TIMES, providing the publisher's price for the two is $5. or more. If you desire any one of the books priced at $1., you may have it absolutely free if you will send us $2. to cover a subscription of one year for the TIMES. Address your orders to the Advertising Manager, 138 North Center Street, Reno Nevada.

THE DIAGNOSIS AND TREATMENT OF CEREBROSPINAL FEVER WITH ANTIMENINGITIS SERUM AND ACCESSORIES.—Mulford Working Bulletin No. 8, Philadelphia; H. K. Mulford Company, Publishers.

This copy of the Mulford Working Bulletins is of more than passing interest just at this time, when cerebrospinal fever prevails and when there are more or less outbreaks of the disease in all parts of the country.

As a rule, we do not get all the data relative to this disease in any one textbook, and very frequently such information is out of date when it reaches the physician. In this brochure, although issued by a manufacturing concern, we are brought down to date, and in an absolutely scientific manner. This little publication embraces information secured from hospitals, military and naval boards of health, and from other sources, embracing the whole world, from which they may be obtained at this particular time.

There is much comprehensive information relative to symptoms, diagnosis, treatment, carriers and cultures, which will be found of value to every doctor, and particularly those connected with the army cantonments, where the disease is more or less prevalent at all times. The methods of tests are given to be employed in the determination of the type of the meningococcus presenting.

In so far as we have been able to determine, we believe this bulletin gives the most comprehensive literature, contained in any one publication offered the profession at this time.

The Mulford Working Bulletins will be sent to any doctor requesting them and without cost to him. Although published by a manufacturing concern, they are scientific in every way and give the reader the correct data upon any subject considered. We believe that a copy of this particular brochure should be in the hands of every physician in the country and suggest that you write for one at once.

PROGRESSIVE MEDICINE, Vol. XX, No. 4; Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia, Assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Dec. 1, 1917, Over 460 pages, Illustrated. Paper. Price, per annum, $6.00. Philadelphia and New York; Lea & Febiger, Publishers. 1917.

This number of the Quarterly, like those that have gone before, gives an epitome of the literature of the world, on the subjects discussed. In certain lines, particularly those dealing with internal medicine, the literature is almost wholly domestic. That dealing with surgery, on the other hand, quotes much from the field of war, and this adds much to the worth of the publication, as it serves to fit all of us, and all of us are liable to be called into action, to take hold of the work of military surgery with a better understanding than was possible for the doctor who entered the foreign service early in the war.

The first three articles are devoted to discussions of diseases of the digestive tract and allied organs; diseases of the kidneys and genito-urinary diseases. As

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we have already said, the majority of the reports in these articles are those drawn from the American clinics, as foreign publications are practically shut off. However, the reader will find much of interest and worth while—much that will serve to show that the American doctor, when thrown upon his own resources, is capable of doing remarkably good work—quite the equal of his foreign brothers who, before the war, were looked to for all things new and novel.

The fourth article deals with surgery of the extremities, shock, anesthesia, infections, fracture and dislocations, and tumors, and here we find more quotations from the foreign literature, particularly French and English. We are told how to handle wounds, both civil and military, how to prepare ourselves to enter the gigantic struggle, if needs be. So much ground is covered that it is impossible to enter into any detail regarding any of the individual points discussed, but suffice to say, every American doctor should read what Bloodgood has gathered for him.

The last article in the book is a practical therapeutic referendum, in which the reader is given the findings in this connection, made during the past year. Here again the references are very largely American and not, as in times past, from our German brethren, for the German journals are not coming to this country at present.

INTERNATIONAL CLINICS, Vol. IV, 27th Series, 1917. Edited by H. R. M. Landis, M.D. Over 300 pages, Illustrated. Cloth, price $2.00, Philadelphia and London; J. B. Lippincott Company, Publishers, 1917.

Considerably over two-thirds of this number of the clinics is given over to clinical lectures, thus adding much to the practical worth of the publication. For the most part these are reports of surgical cases and covering a wide range of conditions. Of course war surgery is mentioned to a greater or less extent, and those conditions of civil life which may be worth understanding in connection with war surgery are given peculiar emphasis. Wound treatment comes in for more discussion than usual. The clinics are not limited to those of any one city or hospital, but come from all parts of the country, so that the reader gets the benefit of the ideas of many surgeons. This new departure is adding much to the real practical worth of the International Clinics, as it deals with the real thing—not theories.

While the two articles in the medical section are not clinical, *per se,* they relate to the clinics, in that they are reports of actual cases. One has to deal with brain tumors of obscure localization, while the other is a clinical study of three cases of primary tumor of the heart. Both subjects are, to the ordinary practician, more or less out of the ordinary, and so are interesting. It is possible that their reading may be followed by better diagnoses in time to come, as they give many points which might otherwise be overlooked.

There are interesting articles on the neurological aspect of mental backwardness in children and its treatment; some food facts for war-time consideration; treatment of pyæmia and septicæmia by transfusion of immunized blood; the immobilization of fractured limbs in military surgery, this by Leon Froger of Alport, France.

As a whole, this number of the Clinics is full of good things, everyone of them being of practical value to the man who is doing everything in medicine and surgery.

THE SURGICAL CLINICS OF CHICAGO, Vol. I, No. 5 (October, 1917). Octavo of 215 pages, 84 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Published bi-monthly. Price per year: Paper, $10; cloth, $14.

This number of the Clinics contains many things which will be found of interest to both surgeon and internist. There is a report of one case which should put us on our guard at all times.

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A doctor was brought to the hospital with a history of abdominal pain, hiccough and hematemesis. There was also a history of urinary suppression on two different occasions. The symptoms were such as to point to either gastric or duodenal ulcer. Operation was done, but no ulcer could be found. The patient died and, as luck would have it, the abdominal viscera were removed and retained at the time of necropsy and therein was found sufficient mercury bichloride to have caused both the symptoms encountered, as well as the death of the patient. A history of previous attempt at suicide seemed to clinch the idea that the sublimate had been taken with like intent. This case shows that in some cases we should go more thoroughly into every detail of the patient's life prior to making a definite diagnosis. Had the history of prior attempt at suicide been elicited in taking the history, it is very probable that, in view of the urinary suppression, sublimate poisoning might have been thought of.

This is only one of several interesting cases cited in this number. But it is one which should be read with more than passing interest, in that it might serve to clear up some cloudy case in the practice of every one of us. This number is particularly well illustrated.

THE MEDICAL CLINICS OF NORTH AMERICA, Vol. I, No. III, (The New York Number, November, 1917). Octavo of 346 pages, 37 illustrations. Philadelphia and London. W. B. Saunders Company, Published Bi-monthly. Price per year: Paper, $10.00; Cloth, $14.00.

When the publishers of this work made up their minds to report the clinics of the leading hospitals of the entire country instead of those of one big medical center, there were some who gave as their opinion that the work would be a failure. If they would only read two of the articles in the number now before us, one on Calories in Common Life, by Graham Lusk and the other on the Typhoid Diet, by Warren Coleman, we believe they would conclude that the move had been a good one. These are two of the best articles we have ever seen on these subpects. They clear up many cloudy points and give the whys and wherefors in a very plain and distinct manner.

But these are not the only things worth while in this number of the Clinics, as some twenty-two men have contributed to this New York Number and have given consideration to a wide range of subjects. One of the cases which will be found of peculiar interest at this particular time is that of combined chlorin gas and trinitrotoluene poisoning, occurring in an ammunition factory. Another subject of interest is the fluoroscopic methods of diagnosis in digestive disease. There are so many conditions and other matters mentioned in this number that we find it impossible to even epitomize them all. We do say, however, that the clinics, coming as they do from various parts of the country, show a vast range of ideas and new findings and we believe that as time goes on there will be a competition aroused throughout the country which will add still more worth to this publication.

THE SURGICAL CLINICS OF CHICAGO, Vol. I, No. VI, (December, 1917). Index Number, Octavo, 245 pages; 89 Illustrations. Philadelphia and London; W. B. Saunders Company, Published Bi-monthly. Price per year: Paper, $10.00; Cloth, $14.00.

This number brings us to the finish of the first volume of The Surgical Clinics of Chicago, and like those which have preceded it, the number now before us is full of things worth while to everyone of us. Even if we do not happen to be announcing ourselves as surgeons, we are all doing more or less surgery, and consequently these various numbers of the Clinic point out how we can do our work better, or, if we are not doing the work ourselves, how to be able to have made a correct diagnosis, prior to handing our patients over to the operator. For these

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Clinics do not confine themselves wholly to operative treatment and technic, but go into details relative to diagnosis, so that everything in connection with every case is made clear to the reader—almost as clear as though he were in the ampitheater listening to the lectures. To the general practician, the article on fractures will probably be of the greatest value, for it is this class of patients that the general man, and particularly if he be in the country, does not refer to the surgeon. This article gives a very complete resume of the subject, with clinics covering a considerable number of fractures in various parts. There is also a report on gun-shot fractures which will be found of timely interest. The balance of this number is given over to the discussion of major surgical cases and while they may prove of greater interest to those doing surgery exclusively, still the man in general practice can gain much from their reading, especially in the way of diagnosis. As in previous numbers, the reader "sees" the patient several times and is given the end results in the majority of instances. While we liked the Murphy Clinics, we believe this later publication, giving as it does the ideas of many, instead of one man, shows a considerable improvement over the one which it has followed.

A Brief Introduction to the GENERAL PRINCIPLES OF THERAPEUTICS, by Francis H. McCrudden, S.B., M.D., Director of Laboratories, Robert B. Brigham Hospital, Boston; Assistant Professor of Applied Thearpeutics, Tufts Medical School, Boston. More than 190 pages. Cloth, Price $1.50 net. Gregory-Boston, 126 Massachusetts Avenue, Boston, Publisher. 1917.

Like everything offered by this author, this small book is, to the last letter of the last word, intensely scientific. McCrudden has a way of working out his problems upon a basis of reason—a reason for everything. The first two sentences of his introduction show, and very surely, that he has the right idea of treatment of disease. They read as follows:

"A disease may take such variable forms in different persons, and change so much from day to day in any one person, that the treatment of every new patient is a new problem. In chronic diseases especially, where the exact details of treatment depend largely on the severity of the disease, on the extent to which function is disturbed, on the condition of the patient as a whole—factors concerning which exact measurements play as yet a small part, and for which judgment is gained only by long clinical experience with cases of all grades of severity—we treat individuals rather than diseases."

Thus it is seen that McCrudden takes a practical view of therapeutics and makes of them something other than a thing empiric, to a very considerable extent. He counsels *treating the individual,* rather than the disease entity. He brings out many points which are contrary to some teachings and in one place says that "Pharmacology deals with only a part of these principles and not from the standpoint of therapeutics. It deals *with the physiological action of substances independently of their therapeutic effect.*"

Without referring especially to any particular condition, the author gives a general idea of the treatment, or therapeutics, of heart disease, diseases of the kidneys, of the vessels, of respiration, of the gastro-intestinal tract, of the general metabolism, other chronic diseases and of specific infectious diseases. A reading of this book will pave the way to a better understanding of specific therapeutics. While, as we have already said, this work is extremely scientific, the language employed by the author is of such character as to make every word readily understood. It is one of the books which will lead the reader to a better understanding and application of therapeutic agents.

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TUBERCULOSIS DEPARTMENT.

ROBERT C. KIRKWOOD, M.D., Editor.
Lakeview, Washington.
(Former Superintendent Mt. View Pierce County-Washington Sanatorium.)

TUBERCULOSE DE GUERRE ET IODE—*L. Boudreau—(Abstract from Jour. de Med. de Bordeau, June,* 1917—*Previous Abstract by Amer. Review of Tuberculosis*).

Boudreau has for years been advocating the internal use of the French Tinct. of Iodin in tuberculosis and he has a certain following both here and abroad.* In this article he states that iodin has an actual curative action in many cases of pulmonary tuberculosis but he cautions that it must be properly administered. By properly administered he states he means the drug must be given in small fractioned doses, gradually increased. The author states he begins with one drop of the tincture six or seven times a day in milk or the usual beverage, at meals. The next day he gives two drops at each dose and so on gradually increasing to thirty, sixty, ninety drops or more, depending on the indication for its use and the way the stomach bears it. The author states he has had patients who finally took several hundred drops over a period of months or even years. Boudreau states further that the iodin treatment can be used best in the home and that he is convinced that the tuberculous do better at home, under the direction of their physician, than in the hospital.† (The French Tinct. of iodin contains one part of iodin to twelve parts of acohol.)

*The Editor of this department has used this treatment fairly consistently in a small number of cases without any noteworthy result except disorder of the stomach, ultimately. The article is abstracted purely as a matter of acedemic interest.

†A fairly extensive experience in the treatment of the tuberculous and a close observation of results obtained by home treatment and by sanatorium treatment convinces the editor that this last statement is not founded upon fact.—R. C. K.

CLINICAL OBSERVATIONS OF 100 CASES OF ARTIFICIAL PNEUMOTHORAX—*R. C. Matson, M.D., Portland, Ore., (Abstract from Cal. State Jour. of Medicine—Aug.,* 1917).

Matson says small quantities of air (200 to 300 c.c.), should be administered every few days until a satisfactory collapse is obtained and then this collapse maintained by the injection of larger amounts at longer intervals. He says this method minimizes the danger of infection, reactivation of a quiescent focus and febrile reactions. He states he uses low pressures at first and then increases. The duration of treatment is according to this author "from six months to two years or more." The author cautions that only those expert in the technic of the procedure should attempt to use it, that cases should be carefully selected and constantly closely watched, especially with the X-ray. Of the indications for its use he lays particular stress upon hemorrhage and says in this condition pneumothorax is obligatory because it stops bleeding quickly and lessens the danger of aspiration pneumonia or "aspiration tuberculosis." Other indications mentioned are chronic cases not doing well under ordinary methods of treatment, cases that are adhesion free and unilateral or with but slight lesion in the other lung. Splendid results are seen in cavity cases he says if the cavity is not too extensive or superficial. Early infiltrations the author states should not be so treated and advanced cases are as a rule not benefitted. Matson says physical examination gives more reliable information as to the presence and location of adhesions than does the X-ray and gives as signs of adhesions,—marked weakening of breath sounds over lower lobe, short-

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ening of inspiration (Jacquerod's sign), pectoral fremitus diminished with increased voice or bronchophony over the same dull area (the "dissociation symptom" of Kuthy). As a means of studying the condition of the chest after introduction of air he gives the X-ray first place, but cautions that in order to early detect signs of activity in the other lung the stethoscope must be frequently used. The results are almost in direct proportion to the size of the pneumothorax he says and in unilateral, adhesion free cases there results arrest and healing of the pathologic process. In cases with adhesions he cautions that the adhesions should be separated slowly and says in these and in bilateral cases the result is symptomatic. The author cautions that one should be sure the needle is in the free pleural space and that the manometer registers a negative pressure before air is introduced. Of the complications he says hydrothorax is the most frequent, subcutaneous emphysema occurs rarely, recrudescence may occur in the uncollapsed lung. In his own cases this latter complication occurred three times, air embolism occurred once (with complete recovery) pyothorax occured seven times, "pleural eclampsia" twice(with complete recovery), pleurisy with effusion on the other side three times. Unless a hydrothorax inconveniences the patient Matson cautions that it should be left alone. His failures have been due he says to recrudescence of pre-existing lesions in the other lung and to pleural adhesions preventing a satisfactory collapse.—R. C. K.

THE TREATMENT OF PULMONARY HEMORRHAGE—*D. C. Martin, M.D.*—(*Abstract from N. Y. Med. Jour., Oct.* 20, 1917).

Except in the severe forms of pulmonary hemorrhage the author states attention to hygienic details is more important than the use of drugs. When the patient is recumbent he says the head and shoulders should be elevated in order that gravity may draw the blood from the pulmonary area into the lower half of the body and to prevent undue dyspnea. Muscular effort should be avoided, speaking above a whisper interdicted and visits of relatives or friends forbidden. The room should be kept at an equable temperature, retching and vomiting avoided and the bowels evacuated daily without effort. The diet should be liquid and administered through a tube. Small pellets of ice may be taken to advantage. Gelatin is best given by mouth in the form of jelly well flavored. Calcium has not given the author the results some claim for it and he states it should not be used for more than a few days at a time. Of the coagulants he says horse serum in 15 to 30 c.c. doses subcutaneously has been most satisfactory but the author cautions against its use for more than ten days. It is contraindicated he says where there is a history of its previous use for like purpose or of the use of antitoxin for diphtheria. It is of most value in "weeping hemorrhages." Salt is of value but its effect not long sustained. It should be given by intravenous injection. Emetin has not proved of definite value. The nitrites are of value in the presence of hypertension. Adrenalin and pituitrin he has discarded. Morphin is he says especially valuable in severe cases where a sedative is needed. It should later be replaced by the bromides. Atropin is of value particularly in the severer hemorrhages, but ergot should not be used because it increases the tension in the lesser circulation. Artificial pneumothorax is of inestimable value if it can be determined from which lung the bleeding comes but the author reminds us that it is often shown post mortem that the hemorrhage came from the less affected lung, in bilateral cases. Saline infusions into a vein, hypodermoclysis and venesection are for use in severe cases where there is danger of exsanguination.—R. C. K.

THE RELATION OF PLEURISY TO TUBERCULOSIS. A STUDY OF THREE THOUSAND CASES—*E. A. Pierce, M.D., Portland,*

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Ore.—(Abstract from Proceedings of Fourth Annual Meeting, Alumni Asso., Medical School, Univ. of Oregon—Portland, June 6-8, 1916).

The author states he is convinced that a large number of very competent physicians treat the subject of pleurisy too lightly, allow temporarily arrested cases of pleurisy to return to work without proper warning and observation and before there is a return to normal physical resistance which is the only safe-guard against a later development of pulmonary tuberculosis. He then reports on a most extensive review of the literature on the subject and presents two series of cases from his own experience. In one series of 1767 cases of pulmonary tuberculosis 614 gave a history of pleurisy and in another series of 518 cases 52 per cent gave a history of previous pleurisy. The author states that on the western coast where the water is so free from minerals a condition of demineralization is very likely to prevail and is probably a factor which provides a willing host for the invasion of pleurisy. He says that all types of pleurisy should be regarded with suspicion as being of tuberculous origin until otherwise proven. Pierce then very carefully reviews the pathology of the various forms of pleurisy and warns us that "the expansion of the lung is arrested thus depriving it of its normal resistance and inviting the entrance of the tubercle bacilli. The author then tells us that the usual signs of pleurisy are—a sharp lancinating pain on breathing, a dry hacking cough, shallow respiratory movements, droop shoulder on the affected side to relax the muscles and the patient finds most comfort in lying on the affected side. Palpation and percussion are negative unless the effusion is considerable when there will be marked dullness on percussion over the dependent part of the lung to the upper level of the fluid. Friction sounds will be heard in the dry form and in the early days of the effusive form before fluid is present. He reminds us that many cases of pleurisy have no pain the only thing recalled by the patient being a slight cough, restricted breathing, perhaps fever and an occasional chill and sweat. In closing Pierce states that if we ever hope to crush out pulmonary tuberculosis we must take heed to the pleurisies that come to our attention, that we must warn our patients of the possibilities and that the only safeguard against a complicating pulmonary tuberculosis is to keep his resisting power at the highest possible standard. That the patient apparently recovers should be allowed to convince the physician, the patient or his family that there is no future danger; else why the startling statistics, which can be fully verified, that fifty per cent or more of apparently completely cured pleurisies are followed within from five to fifteen years by pulmonary tuberculosis. The most pitiful of all questions asked of the physician in tuberculosis work says Pierce is, "Why was I not warned in time."—R. C. K.

EDITOR'S NOTE:—This paper is a timely warning which every physician should bear in mind and take heed to.—R. C. K.

ARE SANATORIA WORTH WHILE?—*Bernice W. Billings and John B. Hawes, 2nd M.D.—(Abstract from American Review of Tuberculosis—Jan.* 1918).

This very interesting and instructive paper is based on an investigation of the present condition of 1056 patients discharged from the four Massachusetts State Sanatoria from May, 1912, to May, 1914. All stages of the disease were represented nearly 50 per cent being far advanced when admitted. After presenting a most interesting mass of facts and figures* with regard to these cases the authors conclude that sanatoria are distinctly worth while and should be encouraged in every way, but that some system whereby patients can be looked up, visited and advised after their discharge is an essential part of sanatorium treatment. That while early diagnosis is of the utmost importance and that while they believe despite their figures (which tend to

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show that the moderately advanced cases fared better than the early cases), the earlier the diagnosis the more favorable the outlook, the fact that the patient is moderately advanced or advanced ought not discourage us nor does it necessarily mean an unfavorable prognosis. They do not believe that the early case is sufficiently impressed with the seriousness of his condition and on this hinges his failure to do well under treatment. Nor does the patient discharged with his lesion "arrested" or "quiescent" always realize how temporary this may be or how slim is his margin of safety. They believe that our present classification is wrong and that more general use should be made of the modfied classification (of Rathbun), whereby the advanced case is more accurately described. Twenty-two per cent of 312 cases now in good condition and working were classed as "advanced" and this the authors feel is misleading. Finally they state that sanatoria are worth while from every point of view and that sanatorium treatment *in its broadest sense* is one of the most important factors in our campaign to control tuberculosis. By "its broadest sense" they state they mean sanatorium treatment that includes early diagnosis, *a length of stay of over six months*, education of the patient and his family regarding tuberculosis, and supervision of the patient after his discharge from the sanatorium. This they say is "real sanatorium treatment."

*Editor's Note:—The following summary appears in the report of this investigation.

1. Of 1056 patients discharged from Mass. State Sanatoria from May, 1912, to May, 1914, 17 per cent were incipient on admission, 36 per cent moderately advanced and 46 per cent far advanced.

2. On the first visit to the homes of these patients 3 months after discharge 28 per cent were in good condition, 50 per cent living, 11 per cent dead, 9 per cent had left the state or could not be located.

3. In Dec., 1916, 29 per cent are living, in good condition and at work, 11 per cent living, 45 per cent dead and 13 per cent could not be located.

4. Of the 312 patients now in good condition and at work 35 per cent were incipient on admission, 43 per cent moderately advanced and 22 per cent far advanced.

5. On discharge 58 per cent of these 312 cases were classified as quiescent or arrested and 22 per cent far advanced.

5. On discharge 58 per cent of these 312 cases were classified as quiescent or arrested and 30 per cent as improved.

6. Comparing those patients who stayed at the sanatorium under six months with those who stayed longer than six months it was found that distinctly better results were obtained among those who remained at the sanatorium more than six months. (R. C. K.)

CORPUS DELICTI.

By J. A. Dungan, M.D.

IV.

VOX HUMANA.

Of all the shocks, we gits this night, this here one caps 'em all!
Me, I fergits the long-faced guy an' staggers to the wall
With my hair arisin' straight up as I looks at the sulphur glim
A-throwin' its hell-born halo 'round the wasted face of Slim!
It seems the present fades away, an' my mind goes wand'rin' back
To a time about a year ago an' a little, boarded shack;
It's there I crosses the trail of Slim—he's pressin' pants, them days,
Fer the rest of us long-horns, an' thinks in this, an' other ways
He puts hisself thru school a lot, but if you hears him cough
You feels some way the hand of Fate is markin' that bet off!
Of course we tries to break it to him gentle that-a-way
An' even calls the lung-prof in to dog-nose him one day,
But Slim, he's like all lungers—either b'leeves there's nothin' wrong
Or, if they is, the trouble's gittin' better right along
Which, if you-all rides herd on 'em you sees they pretty nigh
Keeps gittin' better steadily up to the time they die!
I often b'leeves this lung disease affects their brains, first thing,
A-fillin' 'em up with a kind of insane hopefulness, by jing!
A death's head smile upon his face, an' a-waverin' on his feet,
His voice is just a whisper, interrupted by his cough—
I almost grabs him fearin' that some breeze'll blow him off—
Since then I aint heard nothin'—an' now he turns up here!
As the new stiff in the dissectin' room—it certainly is queer!
Just here Bill's match goes slowly out, an' I comes to with a jump

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As over by the door I hears a scuffle an' a thump.
I turns, an' as I does there slowly rises into sight
The sill-hooette of the long-faced gink 'tween me an' the winder-light!
A knife gleams in his fingers, an' I ducks an' reversin' the gun
I beans him with a plenty. Then Bill comes on the run
He grabs the gat an, turns it up, there's a flash an' deaf'nin' roar!
An' in the light we sees the reptile stretched out on the floor.
We afterwards finds the spot in the wall he sticks the knife-blade in
Same time the guy that's over there lambasts him on the chin:
"You all just leave him lay," says Bill, "an' help me carry Slim."
We does. *But it almost gits my goat to take a-hold of him!*
Seems kind of sacrilijous, an' blasphemous that-a-way,
An' tho its quite some time ago, its seems like that today.
Seems like Slim aint no heft at all as we hurries him out
An' none too soon, fer the cops is on the stairs without a doubt,
From room to room we gropes in the gloom, till reachin' a little door,
Bill picks the lock an' gittin' down crawls forward on the floor
In there's a shaft fer liftin' stiffs, an' the pulley-rope hangs free,
An' Bill reachin' in gits hold of the end an hands it back to me,
We loops it 'round the body, an' swings it into space
As the sound of a perlice alarm goes ringin' thru the place
The pulley squeaks a little, an, once in a while we stops
An' listens as we lowers IT if we can hear the cops,
They aint no great ways off we knows fer just beyond the walls
Is the landin' of the stairway up from the lower halls.
Then slow an' steady we lowers again till the rope goes slack in the chute.
Then Bill grabs hold an' slides down it, an' us two follers suite
I leaves the door shut an' the loop pulled tight around the knob
So if they tries to bust in they sure has *one* pleasant job.
We picks up Slim an' carries him to a shaded portico
Where we finds its dark fer the moon has gone down quite some time ago.
I just can see Bill's face as he comes close an' looks at us
Which then's the first I ever b'leeves there's feelin's in the cuss
"Well boys," he says, an' his accents shake. "We owes this much to Slim
"To carry him back to the boneyard, an' decently bury him!
"We can; just now the only thing *is how to doge the cops,*
"We might——. Hold on a minute!" an' his voice trails off an' stops,
A smile seems growin' on his face. He stands as in a spell—
Seems 'if I almost hears some plan a-peckin' thru the shell!
A minute he stands there thinkin' then steals out in the night
But comes back presently an' says they aint no cops in sight
Then he outlines what his scheme is—to go right out in front
The guard he says is 'round behind—not figgerin' on a stunt,
As bold as this—which, any time Bill's plans falls down, I'd say
It wouldn't likely be fer lack of boldness that-a-way.
"Another thing," he says, "we'll have to walk him on his feet
"Because if we was carryin' him an' happens fer to meet
"A cop he'd likely start at once investigatin' us
"An' the way I feels tonight I'd start a-shootin' up the cuss!"
We starts Slim out with Bill's hat stuck slaunchway on his head,
An' actually it dont seem somehow as if he's dead!
As we gits to the corner there heaves up into sight
A feller with a helmet an' star a-gleamin' bright
"Halt! Who goes there," he bellers, an' obediently we stops
Tho soon's we hears his voice we knows he's one of the local cops.
Bill calls him pleasantly by name an' goes on fer to state
We're takin' one of the boys to bed that's been out on a skate.
"You're 'bout all right now, aint you Pete? says he addressin' Slim
An' you can hang me fer a Dutchman, par, if Slim dont answer him!
As strong, an' clear an' natural as life, an' twice as loud
He comes back soon as Bill is thru, plum chesty like an' proud,
"Of course I'm right! Who says I aint? Oh, sure it's only Pat
"Push on Bill, he's a friend of mine—dont' mean a thing by that!"
Pat grumbles some 'bout orders, but motions us to pass
An' stoops to pick up somethin' *that he finds there in the grass!*

Many reports testify to the efficacy of pilocarpine as a remedy for deafness.

Where there is a tendency to local congestion with fever, belladonna and aconite work together most harmoniously.—Ellingwood.

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AMERICAN PROCTOLOGIC SOCIETY.

NINETEENTH ANNUAL MEETING, HELD AT NEW YORK, N. Y. JUNE 4 AND 5, 1917

Officers elected for the ensuing year: President, Jerome M. Lynch, M.D., New York, N. Y. Vice-President, E. H. Terrell, M.D., Richmond, Va. Secretary-Treasurer, Collier F. Martin, M.D., Philadelphia, Pa.

Executive Council: 1. Alfred J. Zobel, M.D., San Francisco, Cal. 2. Jerome M. Lynch, M.D., New York, N. Y. 3. T. Chittenden Hill, M.D., Boston, Mass. 4. Collier F. Martin, M.D., Philadelphia, Pa.

The next annual meeting will be held in Chicago, Ill., June 10-11, 1918.

ABSTRACT.

THE PLACE OF THE PROCTOLOGIST IN A DIAGNOSTIC GROUP.—*By Alfred J. Zobel, M.D., F.A. C.S., San Francisco, Calif.*

Dr. Zobel in his address stated that the charter members of the American Proctologic Society were the pioneer teachers and practitioners of modern proctology. Through the efforts of the Fellows of the Society proctology has received recognition as a specialty both from the American Medical Association and the American College of Surgeons.

Attention was again called to the fact that but few of the undergraduate medical schools give any adequate instructions in entero-proctology by qualified men. In sharp contrast to this, it is noted that in every postgraduate medical school in the country there is a department of rectal and colonic surgery, whose existence is amply justified not only by the number of patients which it treats, but by the large attendance of postgraduate students.

It is urged that the undergraduate medical schools, particularly those attached to universities, should take heed of the demands and needs of modern medicine, and that they should begin to realize that failure to impart instruction in entero-proctology, and in the other recognized specialties which have arisen in late years, impairs their standing as thorough teaching institutions.

Up to about twenty years ago all the medical needs of a community were attended to by the so-called family doctor. But year after year changes have been going on until today is the day of the specialist.

This era of specialism gives evidence of the advancement and betterment of the whole profession; it means far more efficient service rendered to the public than it has reeived in the past.

It now requires a close and almost undivided attention to that subject alone if one wishes to keep abreast with what is being accomplished in any special line of work.

With more knowledge and longer experience the specialist better realizes the close relationship existing between his particular field and all the other parts of the body. He further learns that while, from devoting his entire attention to his own special work, he excels therein, he consequently lacks knowledge, experience and adeptness in that of others. As a result, lately among progressive men there has arisen a movement to form what is known as "Diagnostic Groups." Group diagnosis is not a new idea. It has been used for years in the postgraduate schools, which are the only institutions possessing a staff of clinicians in every specialty of medicine and and surgery. The present movement is simply an elaboration and an extension of the original idea.

Every diagnostic group should include specialists in every branch of medicine and surgery. In it should be an entero-proctologist with training and experience sufficient to warrant the interpretation of his findings being considered of some value.

The Fellows of the American Proctologic Society have repeatedly urged the necessity for cooperation with the internist, surgeon and other specialists. They have again and again pointed out that anal, rectal and colonic lesions often give rise reflexly to symptoms which may be wrongly attributed to disease in other parts of the body, and vice versa. This is especially true with regard to the reproductive and urinary organs of the male and female. Therefore, in the consideration of cases presenting symptoms in these parts, it is equally important to secure the opinions of the gynecologist, urologist, and proctologist before a correct and final diagnosis can be deduced.

It is the high-class men among the various specialists of medicine and surgery who best know the value of, and mostly insist upon the need for ano-recto-colonic examinations. They are the ones who best understand that through long and varied experience, skill in the use of the illuminated pneumatic sigmoidoscope, and ability to correctly interpret what is seen, the entero-proctologist is the one who should be relied upon to do this part in the diagnostic scheme.

The time has already arrived when even the laity recognize this, and they are now quick to take cognizance of the neglect of their medical adviser to secure for them an expert examination of the rectum and colon.

Every diagnostic group should include a competent proctologist. Only then will it be worthy of the name of "Diagnostic Group."

ABSTRACT

ADULT RECTAL PROLAPSE—TWO CASES AND A CONTRAST—*By Ralph W. Jackson, M.D., F.A. C.S., Fall River, Mass.*

Too few papers have appeared from the pens of proctologists on the major types of rectal prolapse. The subject deserves more attention. Two sharply contrasting cases bring out the writer's views on the therapy. The first was operated four times; extensive regional cauterization resulting in recurrence; posterior rectopexy resulting in recurrence; amputation, resulting satisfactorily as regards anal prolapse, but leaving a very large posterior vaginal her-

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nia, which was promptly cured by cul de sac closure with sigmoid-uteroventral wall suspension. The second, and less favorable, case was promptly cured by one operation identical with the final operation in the first case. The pelvic floor as a support depends on the sufficiency of four factors. The pelvic fascia is variable in strength and attachments, varying the depth of the peritoneal cul de sac. The strength of the levators and their uplift is not a constant thing. The anal and vaginal orifices may be guarded by sphincters, peri-vulvar muscles, a perineum and levators which are imperfect through trauma or atrophy. An amount of adipose padding about these structures is essential but but often lacking. The rectum has imperfect support above the pelvic floor and its anterior wall none at all. Prolapse begins here from external pressure, or begins below as anal protrusion, but eventually the prolapse contains a hernial cul de sac. Regional cauterization is inadequate to meet any such faults. Posterior rectopexy does not support the primarily offending part. Amputation removes the troublesome part but does not correct the faulty factors which may allow recurrence per annum or per vaginam. Cul de sac closure, though a difficult operation, goes far toward such correction, and suspension helps. The writer would summarize, that the operation of first choice for these very troublesome prolapses is cul de sac closure through the abdomen, plus some form of suspension, to be followed and supplemented, if need be, later by amputation or perhaps some plastic work on the elements of the pelvic floor.

ABSTRACT

Relation of Hemorrhoidal Disease to Health Balance—*By William M. Beach, A.M., M.D., F.A.C.S., Pittsburg, Pa.*

In discussing the "Relation of Hemorrhoidal Disease to the Health Balance," Beach sums up as follows:

1. The deleterious effect upon the patient's mind by increasing his irritability and making him anxious and morose.
2. The many reflexes coincident with ulcerated large or small type of hemorrhoids.
3. The influence upon the so-called vegetative functions of the body and intimate associations with diseases of the heart, lungs, liver and kidneys.
4. The refractory or retroactive relationship in most cases of constipation.
5. The tendency of neglected cases toward infections and cancer.

ABSTRACT

The Principles Underlying the Clamp and Operation for Internal Hemorrhoids—*By W. Oakley Bermance, M.D., Philadelphia, Pa.*

The author calls attention to the purpose of

First: To remove actual piles, or pathology.

Second: To support relaxed pile bearing tissue and mucous membrane. After giving minute details as to his technic he insists that only just ENOUGH tissue be removed to care for the pathology, being sure that columns of mucosa and skin be left between the eschare, thus preventing any undue contraction of the rectal outlet. Unless the tissue included in the clamp is excessive it is not cut off but is destroyed by the careful application of the cautery.

Care is taken that multiple strips of wet gauze are placed under the clamp to prevent undue radiation of heat to the surrounding tissues. Careful placing of the clamp, thorough cooking of the included tissue combined with the crushing produced by the clamp is depended upon to prevent such a complication as hemorrhage. After all danger of secondary hemorrhage has passed the insertion of a gloved finger will overcome the tendency to contraction.

ABSTRACT

Original Research Work on Pruritus Ani—*By Dwight H. Murray, M.D., Syracuse, N. Y.*

Dr. Murray read his seventh annual report on original research work in Pruritus Ani.

He said that he did not feel it necessary to continue to report the work in as great detail as in past years, because so many men in the profession, over such a wide area, were uniformly reporting a confirmation of his claims for the etiology being streptococcus facalis.

He said that he is working with Parke, Davis & Co. for the perfection of a standard stock vaccine that can be used by anyone without the trouble to make cultures. He has used some of this stock polyvalent strain from eight successfully treated patients, and the patients on whom it was used seemed to improve. He had used it only one month, therefore full judgment must be suspended until it has had a longer trial.

During the past year he found the patients all getting worse at about the same time and finally found that a laboratory worker had been deceiving him as to the strength and kind of vaccine; any kind of bacteria were used and few, if any, streptococcus fecalis. The laboratory worker resigned shortly after this and on getting the work in the hands of a proper man all went well again.

Dr. Murray reported that the work of the past year had still more strongly proven the correctness of the bacterial (streptococcus fecalis), infection theory as the etiology. His conclusions of the work are:

First: Conclusions of former years are confirmed and most of them are strengthened by experience of the past year.

Second: The troubles I have had with the laboratory worker, as shown herein, give proof that the benefit received by patients, following the use of streptococcus fecalis vaccine, is not a coincident.

Third: Increasing proof that if rectal pathology is present with streptococcic infection of the anal skin, an operation will not cure the pruritus ani.

Fourth: Increasing proof that if rectal pathology is present without a streptococcus infection of the anal skin, an operation will cure the pruritus ani.

Fifth: Continued proof that there may be complicating infections of the anal skin, in pruritus ani, by staphylococcus or D. coli.

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Sixth: Having published six years of research work, taking into account the report of physicians in this country and abroad who have confirmed his findings as to the skin infection, he feels justified in now claiming that the etiology of pruritus ani is a skin infection and that the streptococcus facalis is the usual bacterium.

ABSTRACT

ADENOMYOMA OF THE RECTUM—*By Frank C. Yeomans, M.D., F.A.C.S., Surgeon to the Central-Neurological and Workhouse Hospitals, Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York City.*

The writer's interest in adenomyoma is due to the following case which appears to be unique:

Mrs. V., French, aged 37, the mother of two healthy children, was seen in consultation in September, 1916, for rectal hemorrhage and pain. The important points of her history were —Pulmonary tuberculosis (?) six years before, cured; menses painful, the flow diminishing; always constipated until three years ago. Then occurred attack of diarrhœa lasting five months, and thereafter intermittent attacks. Past year ten to twelve movements daily, containing blood and mucus. Pain over sacrum is aggravated at menstrual period and with the diarrhœa.

Physical Examination: Pale but well nourished woman, weighing 142 pounds. Wassermann of the blood, negative. Urine normal. Chest and abdomen negative.

Rectal Examination: Three and one-half inches upon anterior rectal wall, just above cervix uteri, finger feels a hard, fixed, fairly tender mass, the limits of which cannot be defined. Proctoscope shows a superficial ulceration, size of a quarter, at recto-sigmoidal juncture. This is red, clean, and bleeds freely on contact. Vaginal examination negative except in posterior fornix was felt the same mass apparently the size of a guinea-hen's egg.

Operation, Sept. 26, 1917. Left rectus incision. No growths were found in liver or other abdominal viscera. The tumor was located in anterior wall of sigmoid just above its juncture with the rectum and extended down two inches on rectum, cervix uteri and posterior vaginal wall. Lower third of sigmoid was mobilized, including small portion of posterior wall of uterus and its cervic, and superior hemorrhoidal artery was ligated. Then the abdominal wound was closed and in lithotomy position the operation was completed by a typical Genu-Tuttle extirpation of the rectum, including the posterior vaginal fornix. Patient reacted promptly from the immediate shock of the operation. Bowels acted on third day and union of sigmoid to peri-anal skin was primary except at one spot, which soon granulated. Patient left hospital in three and a half weeks and is now well, having normal anal sensibility for bowel actions, which occur once or twice daily with normal control. Vaginal and rectal examinations show no abnormalities.

Interest in this and similar tumors in this location centers in their:

(a) Origin. Suggested origins are uterine mucosa, Wolffian ducts and "embryonic rests persisting from the fusion of Muller's ducts." The author's case was clinically an intestinal growth. Dr. James Ewing, after careful study, reported "the most likely origin is from superfluous material derived from that portion of the lower gut which continues on in the embryo to the bladder and allantois, and which normally atrophies. Persistence of a portion of this segment would furnish a source of smooth muscle and intestinal epithelium. I do not think the tumor is of Mullerian origin."

(b) Symptoms. Varying with the development and site of the growth the symptoms would be: obstructive, dysenteric or neuralgic.

(c) Diagnosis. Tumor imparts a rather characteristic feel. Apt to be mistaken for infiltrating, inoperable malignant growth.

(d) Prognosis. Histologically it is benign. Clinically it may be malignant from the symptoms to which it gives rise, or actually undergo malignant change.

(e) Treatment. Surgical removal at the earliest date possible. The abdominal route is preferable but if tumor is at recto-sigmoidal juncture a combined operation will probably be necessary for its removal, as was successfully done in the writer's case.

SYNOPSIS

PELLAGRA, THE PELLAGROUS INTESTINE AND PERI-COLIC VEILS—*By John L. Jelks, M. D., Memphis, Tenn.*

Dr. John L. Jelks describes Recto-Colonic Conditions in Pellagra, gives his observations in Pellagra, which he has contended for seven years is an infection, which begins in the intestine in a similar manner as does typhoid fever, and contends that in all active or acute cases of Pellagra he finds pathology in the intestines commensurate with other symptoms.

The speaker describes the prodromal and the late symptoms and both the early and late pathology observed by him. The speaker describes the entra-abdominal as well also the gut pathology in the different stages.

The speaker says Pellagra seldom develops in sanitary and screened homes, and believes that sanitation, isolation and the elimination of raw vegetables as a diet and effectual screening will control Pellagra. He refers to the fact that the negroes and poor whites in his section have more money, and more to eat and a greater variety of diet than they ever had, yet that Pellagra is increasing rapidly in the out-lying districts about Memphis, though it seldom extends over into the sewered and screened section of the city proper. The speaker referred to a recent ordinance that had passed in the City of Memphis requiring doctors to report all cases of Pellagra and to exercise the same precautionary measures in these as in case of typhoid fever.

ABSTRACT

NEO-PROCTOLOGY. A GLIMPSE INTO THE FUTURE —*By Jerome Morley Lynch, M.D., F.A.C.S., New York City.*

We cannot claim for proctology that it is a

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new field of effort. It was practiced centuries ago. In early records are described the cutting of a fistula and the ligature operation for hemorrhoids. While, therefore, technic offers no novelties, physiologic surgery affords a most promising field for the further development of proctology.

The observations of the ancients were remarkably accurate, and, considering the limited amount of detailed knowledge at their command, are as wonderful examples of the power of human induction as many of the best conclusions of the modern day. Consider, for example, their decision that a hemorrhoidal flux was in some cases to be regarded as beneficient. Whether or not the cause was known, as we understand it today, to be hepatic cirrhosis or right heart engorgement, still, for all, the observation is based upon as sound philosophy as could possibly be adduced today.

It is well for us, in the occasional mental stock-taking (which is periodically forced upon us), to bear in mind that the tendency of modern scientific instruments of precision, together with all the wonderful array of laboratory tests, while of indisputable value, are in a certain sense of greater value to the patient than to the physician; for they certainly tend to take from the latter the necessity for that keenness of perception and correlative interpretation of symptoms, which was the distinguishing characteristic of the earlier physicians whose chief reliance was their own mental activity.

ABSTRACT

REPORT OF A CASE OF IDIOSYNCRACY TO QUININE AND UREA HYDROCHLORIDE—*By Collier F. Martin, M.D., Philadelphia, Pa.*

Martin reports a case of toxic symptoms appearing in a patient from an injection of 3 m. of 10% solution of quinine and urea hydrochloride. The symptoms complained of by the patient were swelling of the hands and feet, and numbness of the extremities. For a few hours there was some difficulty in respiration, associated with a tendency to fainting and some nervous perturbation. Later there developed an urticarial rash, covering the entire body, associated with intense itching. The attack subsided in about two days, leaving the patient with no alarming symptoms. The patient has had two previous experiences, and certainly should have informed her physician of her susceptibility. The case is cited simply to note one of the complications which may occur when using this drug.

ABSTRACT

THE NON-SURGICAL TREATMENT OF SPLANCHNOPTOSIS—*By Rolla Camden, M.D., Parkersburg, W. Va.*

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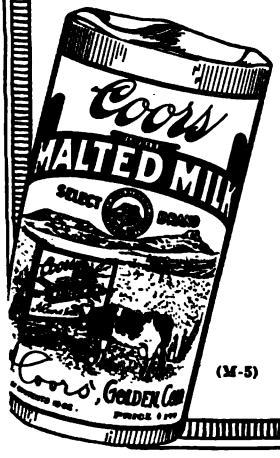

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